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# **Berlin: A Demographic Tale of Two Cities**

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**IIASA Working Paper**

**WP-81-026**

**March 1981**



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BERLIN: A DEMOGRAPHIC TALE OF TWO CITIES

Peer Just

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## FOREWORD

Interest in human settlement systems and policies has been a central part of urban-related work at the International Institute for Applied Systems Analysis (IIASA) from the outset. From 1975 through 1978 this interest was manifested in the work of the Migration and Settlement Task, which was formally concluded in November 1978. Since then, attention has turned to dissemination of the Task's results, to the conclusion of its comparative study, and to the exploration of possible future work that might apply the newly developed mathematical methodology to other research topics.

This paper focuses on the population structure of East and West Berlin. Using the data base collected as part of the Comparative Migration and Settlement Study, the author compares the current patterns and future prospects of the two city populations.

Papers summarizing previous work on migration and settlement at IIASA are listed at the back of this paper.

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## ABSTRACT

This paper reports on an analysis of urban growth of East and West Berlin. A brief historical overview, given at the beginning, is followed by a description of the current patterns of spatial population growth. The impacts of the age composition and the present demographic schedules are investigated using multiregional life tables and population projections. Some remarks about the future shares of the labor force and post-labor force population conclude this study.

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## BERLIN: A DEMOGRAPHIC TALE OF TWO CITIES

### 1. INTRODUCTION

The purpose of this study is to show how multiregional demography and the computer programs based on this technique can be applied to the analysis of urban growth in a two-region system. This case study begins with two similar units which will be treated separately. For the multiregional analysis each of these units are then divided into a two-region system: West Berlin and the Federal Republic of Germany (FRG) and East Berlin and the German Democratic Republic (GDR). These two cities of Berlin were chosen for many reasons, the most important of which being their unusual history in the past decades and the availability of corresponding data sets for the same base period. To understand the relationship between East and West Berlin, a brief historical overview is given as background material for the following demographic analysis.

#### 1.1 Berlin from Its Beginning to the End of World War II

Berlin is a relatively young town compared with other European cities, having begun early in the thirteenth century as two separate towns located on both banks of the Spree River.



In 1709 these independent administrations came together to form a united government and a new city, which grew rapidly due to commerce. Berlin then joined the great Hanseatic League and as a result, remained almost fully independent. In 1414, however, the Hohenzollern established their rule in the area, and at the end of the fifteenth century, Berlin became the capital of the Electorate of Brandenburg. By 1648 Berlin's population was only about 6000, and the town played a relatively unimportant role compared to such old commercial cities as Nuremberg and Frankfurt. The population increased considerably in the seventeenth century when Brandenburg became a Protestant refuge and more than 5000 Huguenot immigrants moved to Berlin, thus making the total population around 25000.

The Prussian and Napoleonic wars, occurring at the end of the eighteenth and the beginning of the nineteenth century, caused a decline in population.

Berlin recovered quickly, however, and since 1809 there was a rapid population growth--mainly due to the extension of boundaries (Figure 1). In the second half of the nineteenth century, some villages and suburbs became a part of Berlin. The industrial growth and the need for a coordinated transportation system forced the government in 1920 to reorganize the entire urban area of Berlin and its suburbs. As a result, the new municipality of Berlin was formed. An idea of how rapid the population growth was is given in Table 1 which shows not only the number of people and size of Berlin in various years, but also the growth compared to the preceding year. [Note that the population figures since 1825 are based on the hectare (ha) size of Berlin in 1946 and not on the actual size at the given year. The new size of 87,810 ha has remained nearly unchanged since 1920.]

By 1939, Berlin had become the greatest industrial and commercial city on the continent and the sixth largest city in the world. But the city's good fortune was not destined to remain. During the Second World War, 32 percent of all flats

and most of the industrial plants were destroyed, and the population dropped from 4.3 million in 1939 to 2.8 million by the end of the war (Schroeder 1962).

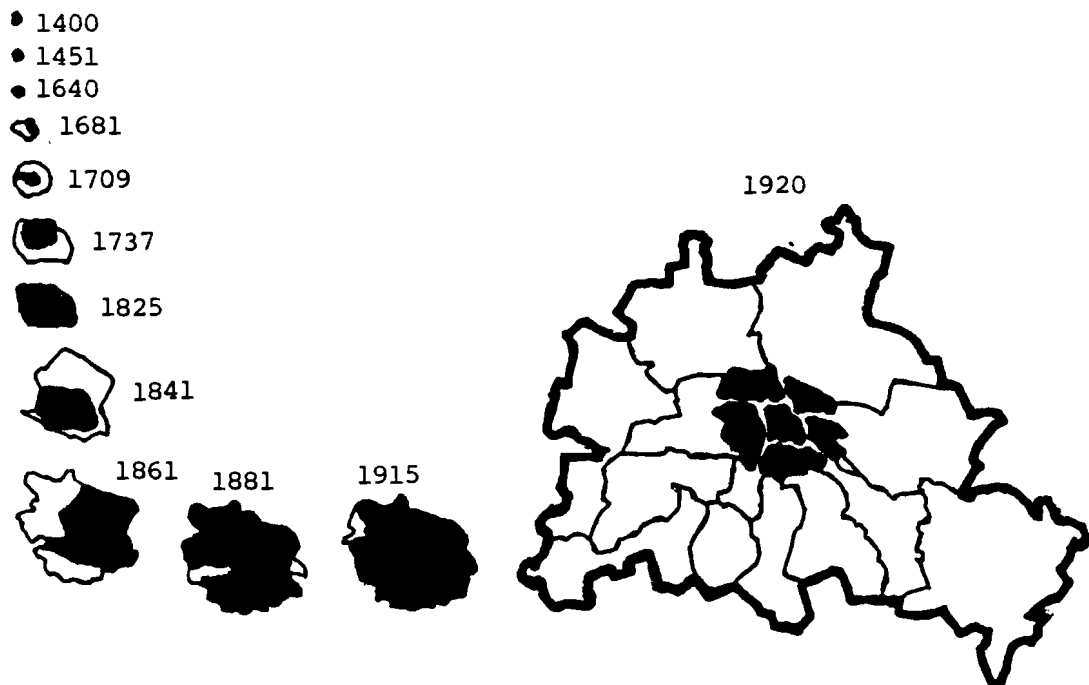


Figure 1. Growth in the size of Berlin from 1400 to 1920.  
(Source: *Berlin in Zahlen* 1947:17.)

## 1.2 Berlin after World War II

With the end of the war, Berlin lost its function as a capital and was divided into four sectors governed by four military commandants. The Soviet sector had an area of 403 km<sup>2</sup>; the total area of the three Western Allies sectors was 481 km<sup>2</sup>. Since Berlin was nearly in the middle of the Soviet zone of occupied Germany, the Allied Control Council instituted three air corridors for transit through the Soviet controlled air space, although most of the supply for Western sectors remained dependent upon the land and water routes of East Germany.

Table 1. Population and size of Berlin from 1600-1946.<sup>a</sup>

| Year | Population | Growth (%) | Size (ha) | Growth (%) |
|------|------------|------------|-----------|------------|
| 1600 | 9,000      | -          | 73        | -          |
| 1648 | 6,000      | -33.0      | 83        | 13.7       |
| 1681 | 10,000     | +66.7      | 217       | 161.4      |
| 1709 | 57,000     | 470.0      | 626       | 188.4      |
| 1738 | 81,000     | 42.1       | 1,330     | 112.4      |
| 1772 | 133,500    | 64.8       | 1,330     | 0.0        |
| 1800 | 172,100    | 28.9       | 1,330     | 0.0        |
| 1809 | 160,000    | 7.0        | 1,330     | 0.0        |
| 1825 | 251,000    | 56.8       | 1,400     | 5.2        |
| 1843 | 401,000    | 59.7       | 3,510     | 150.7      |
| 1861 | 613,000    | 52.9       | 5,920     | 68.6       |
| 1881 | 1,321,000  | 115.3      | 6,061     | 2.4        |
| 1900 | 2,712,190  | 105.3      | 6,061     | 0.0        |
| 1915 | 4,026,000  | 48.4       | 6,572     | 8.4        |
| 1925 | 4,024,000  | -0.05      | 87,846    | 1236.7     |
| 1933 | 4,242,501  | 5.4        | 88,347    | 0.5        |
| 1939 | 4,321,521  | 1.9        | 88,362    | 0.02       |
| 1945 | 2,807,405  | -35.0      | 88,362    | 0.0        |
| 1946 | 3,187,470  | 13.5       | 88,994    | 0.7        |

<sup>a</sup> The population after 1825 is based on the number of hectares in Berlin in 1946.

SOURCES: *Berlin in Zahlen* 1947:51  
*Statistisches Jahrbuch der Stadt Berlin* 1938:5  
*La Grande Encyclopédie*: Vol. 3  
*Encyclopaedia Britannica*: Vol. 3

In March 1948, the three Western Allies united their zones of Germany into a single economic unit and established a new currency--this caused the end of the Four-Power Control of greater Berlin. A new constitution for West Berlin came into force in 1950 and since 1955, all civilian traffic by road, rail, and water between West Berlin and the FRG was subject to control by officers of the GDR. Finally, in 1962, the USSR abolished the post of Soviet commandant in Berlin and the GDR passed an act incorporating East Berlin into its territory.

A map of the new east and west division of Berlin is given in Figure 2. Table 2 shows the change in population of the two cities since 1951. West Berlin has had a declining population since 1956 with the greatest loss of 6.25 percent being between 1971 to 1976. East Berlin had a substantial loss of 18.87 percent during the 1961-1966 five-year period, mainly because of outmigration, but has had a slightly growing population since the new dramatic outmigration policy was introduced in 1961.

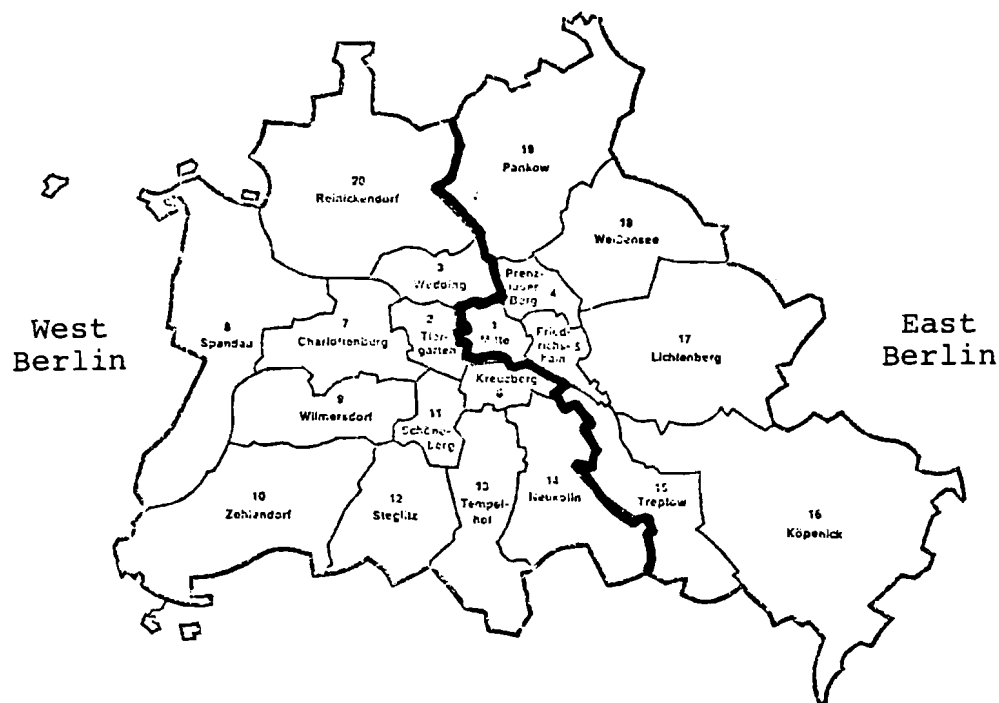


Figure 2. Sectors of Berlin after the Second World War.  
(Source: *Statistisches Jahrbuch 1978:16.*)

Today we are faced with two separate cities. On the one hand, East Berlin is integrated into the economic, political, and territorial system of the GDR. On the other hand, West Berlin is isolated from its natural hinterland and is only connected with the FRG by vital transit routes, which link it to the political and economic system of the FRG.

Table 2. Population of Berlin: 1951-1976.

| Year | Berlin    | West      | East      | Growth (%) |        |
|------|-----------|-----------|-----------|------------|--------|
|      |           |           |           | West       | East   |
| 1951 | 3,347,200 | 2,162,800 | 1,184,400 | -          | -      |
| 1956 | 3,352,700 | 2,221,800 | 1,310,900 | 2.70       | 10.68  |
| 1961 | 3,261,500 | 2,198,000 | 1,063,500 | -1.07      | -18.87 |
| 1966 | 3,270,400 | 2,191,200 | 1,079,200 | -0.31      | 1.47   |
| 1971 | 3,184,700 | 2,098,600 | 1,086,100 | -4.22      | 0.64   |
| 1976 | 3,068,400 | 1,967,300 | 1,101,100 | -6.25      | 1.38   |

SOURCES: *Statistisches Jahrbuch 1978:26*  
*Bevölkerungsstatistisches Jahrbuch der DDR 1979:4*

## 2. CURRENT PATTERNS OF SPATIAL POPULATION GROWTH

### 2.1 Data

The data used in this study are based on two data sets. The input for the multiregional population analysis for the FRG were taken from the population register of December 31, 1974. It is the same file that was used for the ninth volume of the migration and settlement series published at IIASA (Koch and Gatzweiler 1980). The 12 regions of the study, however, were aggregated into two regional units: West Berlin and the FRG.

The data for the GDR were provided by the Directorate of Statistics of the GDR. The base year for the analysis was 1975, one year later than the previous study. The five regions used for the fourth Migration and Settlement study (Mohs 1980) were reduced to two regions: East Berlin and the GDR. To make the results comparable, the 18 age groups of the FRG file were converted into 16 to match the number of age groups used for the GDR.

## 2.2 Fertility

During the first three decades of this century, fertility in Berlin slightly declined and then substantially increased after 1933, reaching a peak in 1941. With the end of World War II, however, fertility dropped below the level of 1933. Table 3 gives the crude birth and death rates for Berlin during the 1920 to 1975 period.

Table 3. Number of births and deaths per 1000 population:  
1920-1975.

| Year | West Berlin |       | East Berlin |       | Greater Berlin |       |
|------|-------------|-------|-------------|-------|----------------|-------|
|      | Birth       | Death | Birth       | Death | Birth          | Death |
| 1920 |             |       |             |       | 16.5           | 14.4  |
| 1925 |             |       |             |       | 11.7           | 11.3  |
| 1930 |             |       |             |       | 9.9            | 11.3  |
| 1935 |             |       |             |       | 14.0           | 13.1  |
| 1938 |             |       |             |       | 14.9           | 13.2  |
| 1945 | 10.6        | 51.0  | 11.6        | 62.8  | 10.9           | 55.5  |
| 1947 | 7.0         | 19.2  | 10.0        | 21.3  | 9.6            | 19.9  |
| 1950 | x           | x     | x           | x     |                |       |
| 1955 | x           | x     | x           | x     |                |       |
| 1960 | 9.8         | 16.4  | 14.5        | x     |                |       |
| 1965 | 11.8        | 18.0  | 16.4        | x     |                |       |
| 1970 | 9.5         | 19.1  | 13.3        | x     |                |       |
| 1975 | 8.8         | 19.5  | 10.6        | x     |                |       |

x = data not available

Note: The calculations were done using data from:

- a) *Statistisches Jahrbuch der Stadt Berlin 1938*
- b) *Statistisches Jahrbuch Berlin 1978*
- c) *Berlin in Zahlen 1947*
- d) *Bevölkerungsstatistisches Jahrbuch der DDR 1979*

A postwar peak in fertility occurred in 1965. Since 1965, birth rates have been steadily declining in both parts of the city. The level of fertility in East Berlin, however, has been substantially higher than in West Berlin.

Table 4 shows the age-specific fertility rates for 1974 and 1975. The fertility rates were computed by dividing the annual number of births by the mid-year population in each age group. The gross reproduction rate (GRR) was then derived by multiplying the sum of the age-specific fertility rates by five--the age interval. The crude birth rate (CBR) was found by dividing the total number of births by the total mid-year population. Thus, the crude rate is influenced by the age composition.

Table 4a. Age-specific fertility rates for the FRG, West Berlin (1974), GDR, and East Berlin (1975).

| fertility rates<br>***** |          |          |          |          |
|--------------------------|----------|----------|----------|----------|
| age                      | frg      | w-berlin | gdr      | e-berlin |
| 0                        | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5                        | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 10                       | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 15                       | 0.013624 | 0.017323 | 0.009457 | 0.000027 |
| 20                       | 0.047439 | 0.041419 | 0.040435 | 0.019553 |
| 25                       | 0.046624 | 0.039222 | 0.071175 | 0.031739 |
| 30                       | 0.024944 | 0.021102 | 0.026150 | 0.031480 |
| 35                       | 0.010979 | 0.008723 | 0.009749 | 0.014232 |
| 40                       | 0.003316 | 0.002236 | 0.004404 | 0.006581 |
| 45                       | 0.000236 | 0.000144 | 0.000777 | 0.001414 |
| 50                       | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 55                       | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 60                       | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 65                       | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 70                       | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 75                       | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| gross                    | 0.736062 | 0.650341 | 0.310752 | 0.775643 |
| crude                    | 0.010163 | 0.003967 | 0.010771 | 0.010691 |
| m.age                    | 26.9246  | 26.3337  | 27.5306  | 29.6155  |

Table 4b. Mean age of fertility rates taking the age composition into account using formula (2)\*.

| FRG   | W.Berlin | GDR   | E.Berlin |
|-------|----------|-------|----------|
| 27.02 | 27.01    | 17.26 | 30.11    |

Generally the CBRs for the two urban areas are lower than those for the FRG and the GDR. The GDR and East Berlin exhibit a more uniform fertility pattern than the FRG and West Berlin. The mean age of childbearing varies between 27.6 and 29.6 in the GDR and East Berlin, respectively, and the values for West Berlin and the FRG are nearly the same at 26.3 and 26.9.

The mean age given in Table 4a is the mean age of the schedule that is not affected by the age composition. Formula (1)\* was used in this case. Formula (2) is another way of calculating the mean age taking the age composition into account. These figures are shown below.

The differences between the result in Table 4a and 4b are due to the age composition of the fertile age groups.

$$* \quad \bar{m}_1 = \frac{\sum (x + \frac{5}{2}) F(x)}{\sum_x F(x)} \quad (1)$$

$$\bar{m}_2 = \sum_x (x + \frac{5}{2}) \cdot c(x)/100 \quad (2)$$

where  $c(x)$  is the percentage distribution and  $F(x)$  are the age-specific fertility rates.



### 2.3 Mortality

From 1920 to 1930, mortality declined, but since 1930 it has increased. This was caused initially by the economic crisis beginning in the thirties and later by the heavy losses during the war and the postwar period (Table 3). The high crude death rates in West Berlin after the war were determined by the age structure of the population. In 1960, 17.4 percent of the population was older than 65 compared to 8.7 percent in 1938 (Schroeder 1962:79).

The age-specific mortality rates are presented in Table 5. These calculations were carried out in a manner analogous to the fertility rate calculations. The mean age is that of the schedule [formula (1)]. Applying formula (2) leads to a mean age of 69.94 for West Berlin and 69.69 for East Berlin.

Table 5. Age-specific mortality rates for FRG, West Berlin (1974), GDR, and East Berlin (1975).

| death rates<br>***** |          |          |          |          |
|----------------------|----------|----------|----------|----------|
| age                  | frg      | w-berlin | gdr      | e-berlin |
| 0                    | 0.004418 | 0.004420 | 0.003619 | 0.003527 |
| 5                    | 0.000431 | 0.000365 | 0.000413 | 0.000380 |
| 10                   | 0.000293 | 0.000354 | 0.000349 | 0.000325 |
| 15                   | 0.000926 | 0.000634 | 0.000791 | 0.000724 |
| 20                   | 0.001019 | 0.001090 | 0.001039 | 0.000950 |
| 25                   | 0.000967 | 0.001299 | 0.000304 | 0.000930 |
| 30                   | 0.001295 | 0.001821 | 0.001297 | 0.001241 |
| 35                   | 0.001303 | 0.002590 | 0.001637 | 0.001637 |
| 40                   | 0.002577 | 0.003840 | 0.002307 | 0.002763 |
| 45                   | 0.004706 | 0.006532 | 0.004042 | 0.004560 |
| 50                   | 0.006300 | 0.008247 | 0.006542 | 0.007357 |
| 55                   | 0.010325 | 0.012339 | 0.009439 | 0.011617 |
| 60                   | 0.016459 | 0.013774 | 0.017713 | 0.020594 |
| 65                   | 0.029506 | 0.031874 | 0.029430 | 0.033836 |
| 70                   | 0.047610 | 0.050400 | 0.052065 | 0.057513 |
| 75                   | 0.110116 | 0.115953 | 0.127331 | 0.133273 |
| gross                | 1.191303 | 1.305663 | 1.297340 | 1.431409 |
| crude                | 0.011510 | 0.013921 | 0.014275 | 0.015260 |
| m. age               | 63.9997  | 63.3907  | 69.3243  | 69.9519  |

Differences in mortality in East Berlin and the GDR are relatively insignificant if one looks at crude birth rates. The opposite can be observed for West Berlin where the CDR is considerably higher than in all the other regions. The variations between gross death rates and crude death rates again reflect the differences in the age composition of the population, which are shown in the percentage distribution tables in Appendix B.

In all four regions, the number of deaths exceeds the number of births. The highest difference is found in West Berlin, the lowest in the FRG.

#### 2.4 Migration

After the war, West Berlin suffered a drastic loss of especially the younger population by outmigration. Until 1961 migration gains from East Berlin and the GDR partly compensated for this loss, and various financial grants given by the FRG for the encouragement of migration from the FRG to West Berlin helped somewhat to balance the age structure. Nevertheless, outmigration still continues to exceed immigration.

The migration data used for this analysis do not include international migration. Only migration flows between the FRG and West Berlin or the GDR and East Berlin are taken into account. International migration, however, is an important factor for West Berlin. In 1977, 30,218 persons migrated from the FRG to West Berlin, but also 35,485 foreigners moved into the city. Discounting outmigration, the loss of 19,779 persons by internal migration was reduced by a gain of 4,129 persons by international migration (*Statistisches Jahrbuch* 1979).

East Berlin has been facing a more favorable situation. Since the heavy outmigration stopped in 1961, the highest migration gains of all regions in the GDR have been observed in East Berlin. This increase of population will continue because of the planned immigration (Mohs 1980:14).

Table 6. Age-specific migration rates: 1974 and 1975.

|        | frg to   | w-berlin to | gdr to   | e-berlin to |
|--------|----------|-------------|----------|-------------|
| age    | w-berlin | frg         | e-berlin | gdr         |
| 0      | 0.000500 | 0.031966    | 0.001743 | 0.014301    |
| 5      | 0.000200 | 0.021839    | 0.000996 | 0.003632    |
| 10     | 0.000164 | 0.013733    | 0.000613 | 0.003400    |
| 15     | 0.000733 | 0.022437    | 0.002224 | 0.017100    |
| 20     | 0.002532 | 0.057666    | 0.002302 | 0.022216    |
| 25     | 0.001601 | 0.055113    | 0.002949 | 0.015355    |
| 30     | 0.000392 | 0.037331    | 0.001412 | 0.009021    |
| 35     | 0.000526 | 0.023965    | 0.000755 | 0.006118    |
| 40     | 0.000392 | 0.019331    | 0.000472 | 0.005043    |
| 45     | 0.000255 | 0.016402    | 0.000331 | 0.003591    |
| 50     | 0.000191 | 0.014332    | 0.000254 | 0.003730    |
| 55     | 0.000195 | 0.015991    | 0.000201 | 0.002123    |
| 60     | 0.000165 | 0.014547    | 0.000193 | 0.002216    |
| 65     | 0.000205 | 0.014630    | 0.000185 | 0.001946    |
| 70     | 0.000171 | 0.010366    | 0.000189 | 0.001723    |
| 75     | 0.000193 | 0.009229    | 0.000285 | 0.002504    |
| gross  | 0.045311 | 1.900125    | 0.073349 | 0.624623    |
| crude  | 0.000602 | 0.024239    | 0.001059 | 0.003305    |
| ml.age | 29.9067  | 32.6323     | 25.5653  | 26.1310     |

Table 6 presents, for each region of origin, the age-specific outmigration rates by region of destination. For every age group the column for West Berlin shows a considerably higher outmigration than for the other three regions, the most remarkable differences being in the 30 to 34 age group. For a further analysis of these figures an age profile of migrants was calculated using a method developed at IIASA (Rogers, Castro, Raquillet 1977). The underlying function used for this analysis was

$$N(x) = a_1 e^{-a_1 x} + a_2 e^{-a_2 (x-\mu_2) - e^{-\lambda_2 (x-\mu_2)}}$$

and

$$N_{ij}(x) = \frac{0_{ij}(x)}{\sum 0_{ij}(x)} \quad , \quad 0_{ij} = \text{outmigrants at age } x$$

$$\sum N_{ij}(x) = 1$$

The profile of the model schedule is defined by four of the seven parameters  $\alpha_1$ ,  $\alpha_2$ ,  $\mu_2$ , and  $\lambda_2$ . Its level is determined by the remaining three parameters  $a_1$ ,  $a_2$ , and  $c$ . The method to fit the model schedule to the data is described in Castro and Rogers (1979). The results of the parameter estimation are given in Table 7 and Appendix C shows the plotting of the curve for each region as well as the rates for each age group. Figure 3 gives the plottings of outmigration from East and West Berlin and of immigration from the FRG and GDR.

Table 7. Parameters of the migration schedule.

| Parameters  | FRG      | W.Berlin | GDR      | E.Berlin |
|-------------|----------|----------|----------|----------|
| $a_1$       | 0.01318  | 0.01632  | 0.02910  | 0.02524  |
| $\alpha_1$  | 0.25564  | 0.18457  | 0.16109  | 0.11136  |
| $a_2$       | 0.09613  | 0.05229  | 0.10509  | 0.06666  |
| $\alpha_2$  | 0.13748  | 0.11737  | 0.18138  | 0.11547  |
| $\mu_2$     | 19.28615 | 20.67937 | 23.50405 | 18.04604 |
| $\lambda_2$ | 0.73059  | 0.37812  | 0.16385  | 0.25655  |
| $c$         | 0.00382  | 0.00646  | 0.00272  | 0.00332  |

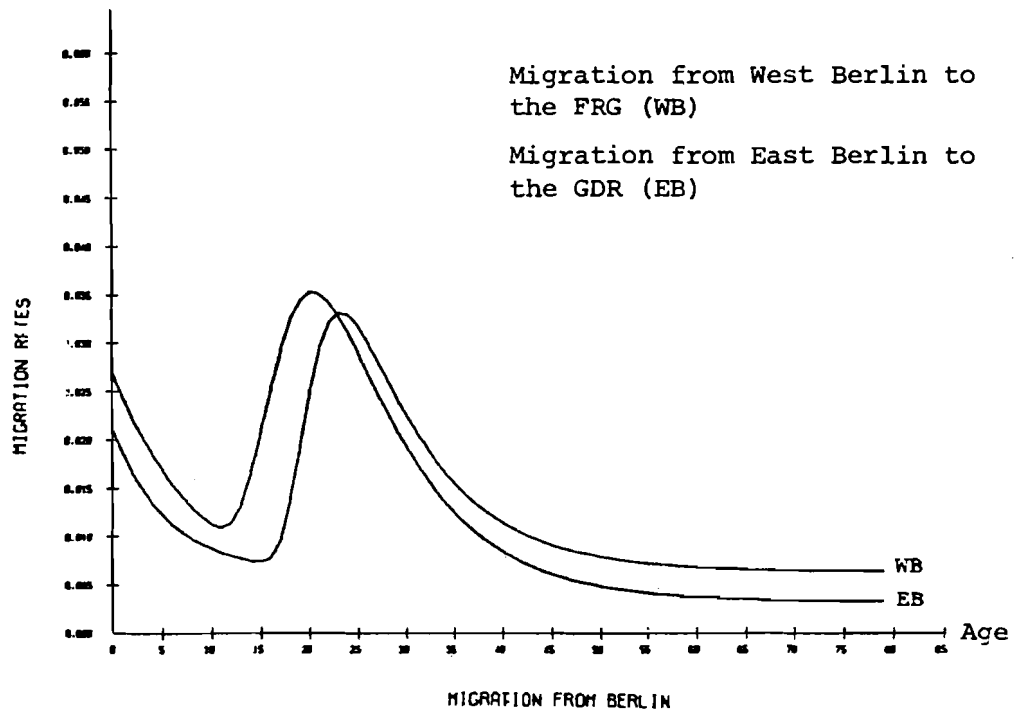
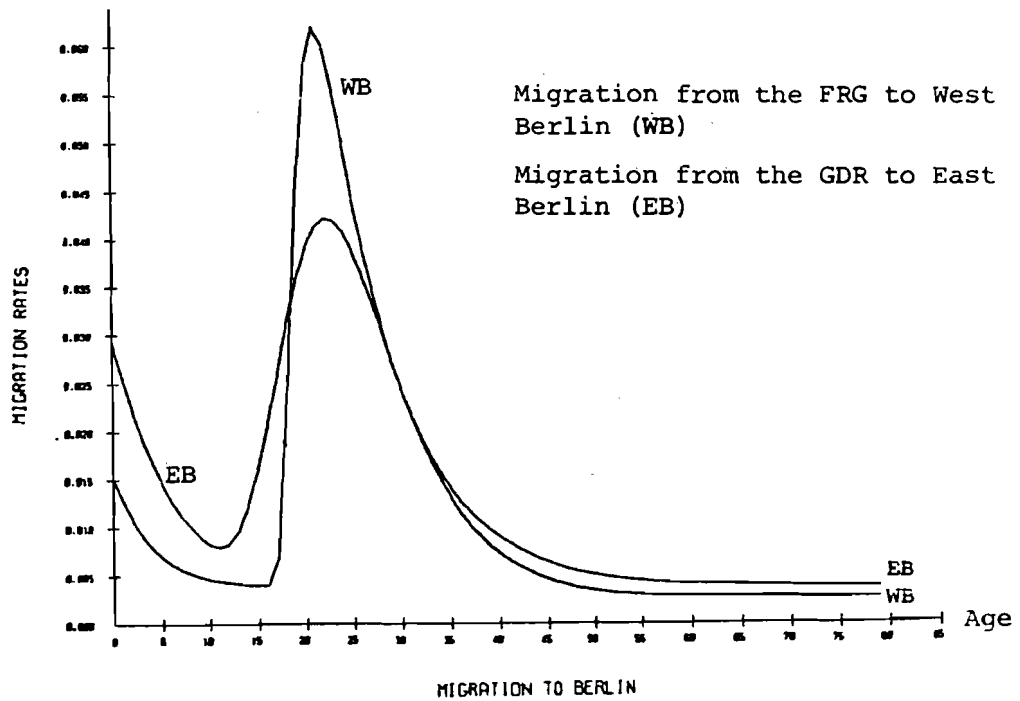


Figure 3. Outmigration from East and West Berlin and immigration from the FRG and GDR.

The age patterns of the migrants vary considerably between the two parts of Berlin in the 0-29 years. At about age 18 a sharp increase of immigration to West Berlin can be observed. The fact that West Berlin has an important university partly explains this migration gain. Also, young men who move to West Berlin are not required to serve in the FRG military forces.

Migration to East Berlin in 1975 is more equally distributed than that of West Berlin in 1974 over the ages of 15-29 years. The peak is at age 25-29. Mohs accredits this to the available choice of jobs offering good long-term prospects. The migration rate of the 0-5 year age group is relatively high compared with West Berlin because of this older-age migration peak. Often these migrants are recently married and have young children that fall within the first age bracket. The migration rates of the older age groups, however, are not significantly different in the two parts of the city.

Migration out of Berlin into the GDR or FRG shows a more uniform pattern. The outmigration peak is more obvious for East Berlin, however, in the 20-24 age group. The outmigration rates in the 20-24 and 25-29 age groups are nearly the same for East and West Berlin. The fact that West Berlin cannot provide jobs for all students finishing their education is the reason for the relatively high outmigration of the 25-29 year olds.

### 3. MULTIREGIONAL POPULATION ANALYSIS

Multiregional population analysis has been developed to study the simultaneous interaction between regional components of population change within a single multiregional model. The basic parameters for this analysis are the age- and region-specific rates of mortality, fertility, and migration. These rates for East and West Berlin as well as for the FRG and GDR were presented in the previous section. The model for examining the evolution of the multiregional population focuses on a closed system with given initial regional distribution of the population and fixed age-specific rates. Drawing on the results

generated by the computer program in Willekens and Rogers (1978) the analysis includes the multiregional life table, mobility, and fertility expectancies and the multiregional population projection.

### 3.1 The Multiregional Life Table

A life table describes a stationary population in which the number of births is equal to the number of deaths for a hypothetical cohort. The multiregional life table incorporates the migration between the regions into this concept. The computer program uses a birth cohort of 100,000 people for each region.

The first step is to calculate the age-specific transition probabilities from the observed rates (Table 8). Note that the word "transition" is used instead of "moves". Several interregional moves may be made in an age interval by a migrant making only one transition. Even stayers may make moves, but not transitions; the number of transitions, therefore, are usually less than the number of moves. A more accurate estimation, however, can be made if a smaller time interval is used for the calculations.

For example, the probability that a person of age 25 living in East Berlin will still be in this region five years later is 0.922279 and the probability that he will be living in the GDR at this time is 0.073090. The probability of dying in any region (0.004631) is obtained as a residual of unity minus the probability of survival.

The recursive application of these probabilities of migrating and dying to initial cohorts of 100,000 leads to the complete life histories of these cohorts in each region, as shown in Table 9. For example, of the 100,000 babies born in West Berlin, 97,814 will be alive at age five with 83,341 of them still living in West Berlin. The remaining 19,473 will have moved to the FRG.

Table 8. The age-specific probabilities of dying and migrating for the GDR and East Berlin, 1975.

| region gdr<br>***** |          |                                |          |        |
|---------------------|----------|--------------------------------|----------|--------|
| age                 | death    | migration from<br>gdr e-berlin |          | gdr to |
| 0                   | 0.017933 | 0.973234                       | 0.003233 |        |
| 5                   | 0.002037 | 0.993061                       | 0.004852 |        |
| 10                  | 0.001744 | 0.995237                       | 0.003019 |        |
| 15                  | 0.003944 | 0.935435                       | 0.010571 |        |
| 20                  | 0.005180 | 0.931700                       | 0.013120 |        |
| 25                  | 0.004461 | 0.931500                       | 0.014039 |        |
| 30                  | 0.006461 | 0.935716                       | 0.006323 |        |
| 35                  | 0.003393 | 0.937872                       | 0.003730 |        |
| 40                  | 0.013937 | 0.933757                       | 0.002296 |        |
| 45                  | 0.020000 | 0.973146                       | 0.001345 |        |
| 50                  | 0.032137 | 0.966599                       | 0.001214 |        |
| 55                  | 0.046350 | 0.952699                       | 0.000950 |        |
| 60                  | 0.064333 | 0.914233                       | 0.000874 |        |
| 65                  | 0.137290 | 0.361913                       | 0.000791 |        |
| 70                  | 0.230353 | 0.763920                       | 0.000727 |        |
| 75                  | 1.000000 | 0.000000                       | 0.000000 |        |

| region e-berlin<br>***** |          |  |          |
|--------------------------|----------|--|----------|
| age                      | death    | migration from e-berlin to<br>gdr e-berlin |          |
| 0                        | 0.017493 | 0.067558                                   | 0.914944 |
| 5                        | 0.001901 | 0.042062                                   | 0.956037 |
| 10                       | 0.001627 | 0.041007                                   | 0.957366 |
| 15                       | 0.003629 | 0.031261                                   | 0.915110 |
| 20                       | 0.004761 | 0.104037                                   | 0.391202 |
| 25                       | 0.004631 | 0.073090                                   | 0.922270 |
| 30                       | 0.006195 | 0.047937                                   | 0.945369 |
| 35                       | 0.008154 | 0.029326                                   | 0.962019 |
| 40                       | 0.016722 | 0.024533                                   | 0.961745 |
| 45                       | 0.022522 | 0.017404                                   | 0.960073 |
| 50                       | 0.036003 | 0.017343                                   | 0.946074 |
| 55                       | 0.056393 | 0.010045                                   | 0.933561 |
| 60                       | 0.077362 | 0.010033                                   | 0.392106 |
| 65                       | 0.156112 | 0.006314                                   | 0.335574 |
| 70                       | 0.251337 | 0.006635                                   | 0.742026 |
| 75                       | 1.000000 | 0.000000                                   | 0.000000 |



Table 8 (continued) The age-specific probabilities of dying and migrating for the FRG and West Berlin, 1974.

| region frg<br>***** |          |                                |          |        |
|---------------------|----------|--------------------------------|----------|--------|
| age                 | death    | migration from<br>frg w-berlin |          | frg to |
| 0                   | 0.021850 | 0.975871                       | 0.002279 |        |
| 5                   | 0.002153 | 0.996477                       | 0.001370 |        |
| 10                  | 0.001466 | 0.997744                       | 0.000790 |        |
| 15                  | 0.004620 | 0.991931                       | 0.003449 |        |
| 20                  | 0.005035 | 0.933750                       | 0.011165 |        |
| 25                  | 0.004830 | 0.933195                       | 0.006975 |        |
| 30                  | 0.006460 | 0.939501                       | 0.004039 |        |
| 35                  | 0.003931 | 0.933568                       | 0.002452 |        |
| 40                  | 0.012358 | 0.935354                       | 0.001833 |        |
| 45                  | 0.023260 | 0.975550                       | 0.001190 |        |
| 50                  | 0.033473 | 0.965633                       | 0.000339 |        |
| 55                  | 0.050331 | 0.948731                       | 0.000337 |        |
| 60                  | 0.079043 | 0.920221                       | 0.000730 |        |
| 65                  | 0.133057 | 0.866037                       | 0.000356 |        |
| 70                  | 0.212732 | 0.736605                       | 0.000663 |        |
| 75                  | 1.000000 | 0.000000                       | 0.000000 |        |

| region w-berlin<br>***** |          |  |          |  |
|--------------------------|----------|--|----------|--|
| age                      | death    | migration from w-berlin to<br>frg w-berlin |          |  |
| 0                        | 0.021857 | 0.144733                                   | 0.333410 |  |
| 5                        | 0.001833 | 0.103494                                   | 0.394668 |  |
| 10                       | 0.001759 | 0.066253                                   | 0.931938 |  |
| 15                       | 0.003473 | 0.105629                                   | 0.890393 |  |
| 20                       | 0.005391 | 0.249361                                   | 0.745243 |  |
| 25                       | 0.006277 | 0.240093                                   | 0.753525 |  |
| 30                       | 0.003343 | 0.169329                                   | 0.821323 |  |
| 35                       | 0.012650 | 0.111722                                   | 0.375629 |  |
| 40                       | 0.016723 | 0.093153                                   | 0.833119 |  |
| 45                       | 0.032024 | 0.076607                                   | 0.891369 |  |
| 50                       | 0.040161 | 0.063911                                   | 0.890923 |  |
| 55                       | 0.061755 | 0.072671                                   | 0.865575 |  |
| 60                       | 0.039305 | 0.064465                                   | 0.346230 |  |
| 65                       | 0.147133 | 0.061144                                   | 0.791723 |  |
| 70                       | 0.223552 | 0.040196                                   | 0.736252 |  |
| 75                       | 1.000000 | 0.000000                                   | 0.000000 |  |

Table 9. Expected number of survivors at exact age x in each region.

| INITIAL COHORT: |         |                   |          | <u>W. BERLIN</u> (1974) |        |          |
|-----------------|---------|-------------------|----------|-------------------------|--------|----------|
|                 |         | <u>FRG</u> (1974) |          |                         |        |          |
| age             | total   | frg               | w-berlin | total                   | frg    | w-berlin |
| 0               | 100000. | 100000.           | 0.       | 100000.                 | 0.     | 100000.  |
| 5               | 97315.  | 97537.            | 228.     | 97814.                  | 14473. | 33341.   |
| 10              | 97605.  | 97267.            | 338.     | 97630.                  | 23048. | 74582.   |
| 15              | 97461.  | 97070.            | 391.     | 97465.                  | 27937. | 69528.   |
| 20              | 97012.  | 96323.            | 684.     | 97094.                  | 35056. | 62033.   |
| 25              | 96513.  | 94933.            | 1585.    | 96531.                  | 49953. | 46625.   |
| 30              | 96050.  | 94193.            | 1357.    | 96047.                  | 60561. | 35437.   |
| 35              | 95425.  | 93518.            | 1906.    | 95342.                  | 65934. | 29403.   |
| 40              | 94561.  | 92662.            | 1893.    | 94378.                  | 68466. | 25912.   |
| 45              | 93338.  | 91482.            | 1856.    | 93016.                  | 69377. | 23139.   |
| 50              | 91151.  | 89387.            | 1764.    | 90650.                  | 69941. | 20709.   |
| 55              | 88038.  | 86437.            | 1651.    | 87476.                  | 63964. | 18512.   |
| 60              | 83635.  | 82130.            | 1505.    | 82862.                  | 66777. | 16085.   |
| 65              | 77009.  | 75675.            | 1334.    | 76147.                  | 62437. | 13660.   |
| 70              | 66743.  | 65622.            | 1121.    | 65823.                  | 54954. | 10369.   |
| 75              | 52533.  | 51664.            | 869.     | 51703.                  | 43664. | 8039.    |

| INITIAL COHORT: |         |                   |          | <u>E. BERLIN</u> (1975) |        |          |
|-----------------|---------|-------------------|----------|-------------------------|--------|----------|
|                 |         | <u>GDR</u> (1975) |          |                         |        |          |
| age             | total   | gdr               | e-berlin | total                   | gdr    | e-berlin |
| 0               | 100000. | 100000.           | 0.       | 100000.                 | 0.     | 100000.  |
| 5               | 93207.  | 97333.            | 323.     | 93250.                  | 6756.  | 91494.   |
| 10              | 93002.  | 96742.            | 1260.    | 93062.                  | 10557. | 87505.   |
| 15              | 97331.  | 96333.            | 1493.    | 97901.                  | 14095. | 83306.   |
| 20              | 97446.  | 95057.            | 2389.    | 97542.                  | 20701. | 76341.   |
| 25              | 96942.  | 93566.            | 3376.    | 97069.                  | 28316. | 68752.   |
| 30              | 96509.  | 92082.            | 4428.    | 96624.                  | 32318. | 63606.   |
| 35              | 95337.  | 91071.            | 4816.    | 96017.                  | 35440. | 60576.   |
| 40              | 95083.  | 90110.            | 4973.    | 95225.                  | 36317. | 53403.   |
| 45              | 93753.  | 83769.            | 4990.    | 93910.                  | 37653. | 56253.   |
| 50              | 91870.  | 86916.            | 4954.    | 91390.                  | 37309. | 54031.   |
| 55              | 83394.  | 84101.            | 4793.    | 83722.                  | 37511. | 51211.   |
| 60              | 84725.  | 80171.            | 4554.    | 84095.                  | 36251. | 47344.   |
| 65              | 77473.  | 73345.            | 4133.    | 76333.                  | 33624. | 42714.   |
| 70              | 66763.  | 63252.            | 3511.    | 65953.                  | 29336. | 35717.   |
| 75              | 51310.  | 43659.            | 2651.    | 49318.                  | 22794. | 26524.   |

Table 10 gives the average number of years expected to live in each region by a unit birth cohort (a single person of age zero). This measure depends on two components: the probability of surviving to age  $x$  and the average time spent in each region in a five-year interval by a person of age  $x$  at the beginning of the interval. For example, a person of age 20 born in the FRG is expected to live, on the average, 4.838 years of the following five years. He is expected to spend 4.781 years in the FRG and 0.057 in West Berlin. Note that the last age group is open, and therefore the figures no longer correspond to a five-year interval.

The calculations show that a person born in the FRG will live almost all his life in that region. The same is true for a GDR-born person who will, however, spend up to 0.25 years of the 4.72 years he is expected to live from age 40 to 44 in East Berlin. The cohorts for Berlin show a different pattern. Members of these cohorts are more likely to move to some other region. A person 75 years or older, born in East Berlin, will live as long in the GDR as in the region of birth. Starting with the age of 25, a person born in West Berlin will spend most of his life in the FRG. Having reached the age of 75, he is expected to live 4.01 of the remaining 4.66 years in the FRG.

The measure of the number of years lived beyond age  $x$  is the life expectancy. It is a conditional measure that applies to persons who have already reached age  $x$ .\* Appendix D gives the expectation of life by place of birth for each age. A quick comparison shows that there are no substantial disparities between the regions.

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\*In the multiregional case the number of years lived beyond age  $x$  does not only depend on the mortality schedule of the region of birth but, due to the migration flows between the regions, also on the mortality schedules of all other regions.

Table 10. Average number of years lived in each region by a unit birth cohort.

| INITIAL COHORT: |         | <u>FRG</u> (1974) |          | <u>W. BERLIN</u> (1974) |         |          |
|-----------------|---------|-------------------|----------|-------------------------|---------|----------|
| age             | total   | frg               | w-berlin | total                   | frg     | w-berlin |
| 0               | 4.94538 | 4.93968           | 0.00570  | 4.94538                 | 0.36133 | 4.58353  |
| 5               | 4.88549 | 4.87135           | 0.01414  | 4.88611                 | 0.93302 | 3.94303  |
| 10              | 4.87655 | 4.85842           | 0.01823  | 4.87737                 | 1.27461 | 3.60276  |
| 15              | 4.86182 | 4.83495           | 0.02687  | 4.86393                 | 1.57481 | 3.28916  |
| 20              | 4.83824 | 4.78153           | 0.05671  | 4.84189                 | 2.12529 | 2.71660  |
| 25              | 4.81419 | 4.72815           | 0.08604  | 4.81572                 | 2.76292 | 2.05280  |
| 30              | 4.78685 | 4.69278           | 0.09407  | 4.78474                 | 3.16237 | 1.62237  |
| 35              | 4.74963 | 4.65452           | 0.09512  | 4.74301                 | 3.35999 | 1.38302  |
| 40              | 4.69747 | 4.60361           | 0.09387  | 4.68436                 | 3.45356 | 1.23080  |
| 45              | 4.61223 | 4.52173           | 0.09050  | 4.59164                 | 3.49544 | 1.09620  |
| 50              | 4.48095 | 4.39561           | 0.08536  | 4.45315                 | 3.47263 | 0.98052  |
| 55              | 4.29307 | 4.21417           | 0.07890  | 4.25347                 | 3.39354 | 0.86093  |
| 60              | 4.01609 | 3.94511           | 0.07099  | 3.97523                 | 3.23160 | 0.74363  |
| 65              | 3.59379 | 3.53242           | 0.06137  | 3.54925                 | 2.93603 | 0.61322  |
| 70              | 2.93190 | 2.93215           | 0.04974  | 2.93314                 | 2.46546 | 0.46768  |
| 75              | 4.76661 | 4.68930           | 0.07631  | 4.66092                 | 4.01240 | 0.64853  |

| INITIAL COHORT: |         | <u>GDR</u> (1975) |          | <u>E. BERLIN</u> (1975) |         |          |
|-----------------|---------|-------------------|----------|-------------------------|---------|----------|
| age             | total   | gdr               | e-berlin | total                   | gdr     | e-berlin |
| 0               | 4.95517 | 4.93459           | 0.02058  | 4.95625                 | 0.16800 | 4.78736  |
| 5               | 4.90522 | 4.86314           | 0.04207  | 4.90731                 | 0.43283 | 4.47448  |
| 10              | 4.89533 | 4.82639           | 0.06894  | 4.89909                 | 0.61632 | 4.28277  |
| 15              | 4.88192 | 4.78474           | 0.09718  | 4.88608                 | 0.86991 | 4.01617  |
| 20              | 4.85969 | 4.71556           | 0.14414  | 4.85526                 | 1.22543 | 3.62983  |
| 25              | 4.83623 | 4.64118           | 0.19505  | 4.84231                 | 1.52335 | 3.31896  |
| 30              | 4.80369 | 4.57330           | 0.23039  | 4.81601                 | 1.70645 | 3.10956  |
| 35              | 4.77423 | 4.52951           | 0.24473  | 4.78104                 | 1.80644 | 2.97460  |
| 40              | 4.72103 | 4.47197           | 0.24906  | 4.72339                 | 1.86175 | 2.86164  |
| 45              | 4.64071 | 4.39212           | 0.24859  | 4.64501                 | 1.83654 | 2.75848  |
| 50              | 4.51909 | 4.27342           | 0.24567  | 4.51529                 | 1.83300 | 2.68229  |
| 55              | 4.34047 | 4.10681           | 0.23366  | 4.32042                 | 1.84405 | 2.47637  |
| 60              | 4.05503 | 3.83791           | 0.21712  | 4.01032                 | 1.74588 | 2.26444  |
| 65              | 3.60603 | 3.41493           | 0.19110  | 3.53477                 | 1.57401 | 1.96076  |
| 70              | 2.95184 | 2.79773           | 0.15407  | 2.85929                 | 1.30326 | 1.55603  |
| 75              | 4.01283 | 3.51576           | 0.19607  | 3.71096                 | 1.82319 | 1.88776  |

Table 11. Expectation of life at birth (1974 and 1975).

|          | frg       |           | w-berlin |  |          | gdr       |           | e-berlin |  |
|----------|-----------|-----------|----------|--|----------|-----------|-----------|----------|--|
| frg      | 71.195969 | 42.025524 |          |  | gdr      | 58.973104 | 22.277302 |          |  |
| w-berlin | 1.004412  | 29.344324 |          |  | e-berlin | 2.737217  | 49.001492 |          |  |
| total    | 72.200373 | 71.359350 |          |  | total    | 71.755320 | 71.273703 |          |  |

The expectation of life at birth is shown in Table 11. A baby born in West Berlin will live 42.02 years of the expected 71.86 years in the FRG and only 29.86 in the region of birth. On the other hand, a baby born in East Berlin will stay most of his lifetime in this region, but will also spend 22.27 years in the GDR.

Survivorship proportions, also life table statistics, are given in Table 12. They are used to generate the generalized Leslie matrix for the multiregional growth model. For example, the total survivorship proportion of 20-24-year-old people living in East Berlin is 0.995. That means 99.5 percent of all people aged 20-24 will survive to an age of 25-29. Of these, 90.5 percent will still be in this region five years later, the remaining 8.9 percent will move to the GDR. Total survivorship proportions among all regions have no significant variations.

### 3.2 Mobility and Fertility Analysis

The expected number of migrations an individual makes during his lifetime is given by the net migraproduction rate (NMR) matrix, which is derived from the life table population. To obtain these rates, the observed age-specific total outmigration rates are multiplied by the number of years lived in each region by a unit birth cohort (Tables 6 and 10). Summation

Table 12. Survivorship proportions.

| region w-berlin<br>***** |         |         |          | region frg<br>***** |         |         |          |
|--------------------------|---------|---------|----------|---------------------|---------|---------|----------|
|                          | total   | frg     | w-berlin |                     | total   | frg     | w-berlin |
| 0                        | 0.98303 | 0.12681 | 0.86122  | 0                   | 0.98789 | 0.98602 | 0.00187  |
| 5                        | 0.99322 | 0.08594 | 0.91227  | 5                   | 0.99319 | 0.99710 | 0.00109  |
| 10                       | 0.99736 | 0.08515 | 0.91221  | 10                  | 0.99696 | 0.99485 | 0.00211  |
| 15                       | 0.99561 | 0.17311 | 0.82250  | 15                  | 0.99515 | 0.98799 | 0.00716  |
| 20                       | 0.99425 | 0.24573 | 0.74852  | 20                  | 0.99504 | 0.98592 | 0.00912  |
| 25                       | 0.99251 | 0.20979 | 0.78271  | 25                  | 0.99436 | 0.93370 | 0.00565  |
| 30                       | 0.93932 | 0.14330 | 0.84602  | 30                  | 0.99228 | 0.98897 | 0.00331  |
| 35                       | 0.98440 | 0.10296 | 0.88144  | 35                  | 0.98911 | 0.93696 | 0.00215  |
| 40                       | 0.97476 | 0.08513 | 0.38963  | 40                  | 0.93200 | 0.93048 | 0.00152  |
| 45                       | 0.96393 | 0.07278 | 0.89116  | 45                  | 0.97169 | 0.97065 | 0.00104  |
| 50                       | 0.94935 | 0.07037 | 0.87398  | 50                  | 0.95824 | 0.95736 | 0.00038  |
| 55                       | 0.92489 | 0.06829 | 0.85660  | 55                  | 0.93568 | 0.93487 | 0.00031  |
| 60                       | 0.88321 | 0.06196 | 0.82125  | 60                  | 0.89506 | 0.89428 | 0.00078  |
| 65                       | 0.81764 | 0.05043 | 0.76721  | 65                  | 0.82995 | 0.82919 | 0.00075  |
| 70                       | 1.51557 | 0.16026 | 1.35531  | 70                  | 1.59992 | 1.59672 | 0.00320  |

| region gdr<br>***** |         |         |          | region e-berlin<br>***** |         |         |          |
|---------------------|---------|---------|----------|--------------------------|---------|---------|----------|
|                     | total   | gdr     | e-berlin |                          | total   | gdr     | e-berlin |
| 0                   | 0.93992 | 0.98326 | 0.00665  | 0                        | 0.99024 | 0.05572 | 0.93451  |
| 5                   | 0.99303 | 0.99414 | 0.00394  | 5                        | 0.99824 | 0.04157 | 0.95667  |
| 10                  | 0.99716 | 0.99040 | 0.00675  | 10                       | 0.99737 | 0.06059 | 0.93678  |
| 15                  | 0.99544 | 0.93367 | 0.01177  | 15                       | 0.99580 | 0.09206 | 0.90374  |
| 20                  | 0.99518 | 0.93149 | 0.01368  | 20                       | 0.99532 | 0.08945 | 0.90587  |
| 25                  | 0.99454 | 0.98399 | 0.01055  | 25                       | 0.99458 | 0.06113 | 0.93346  |
| 30                  | 0.99257 | 0.93726 | 0.00532  | 30                       | 0.99283 | 0.03915 | 0.95368  |
| 35                  | 0.93384 | 0.98583 | 0.00302  | 35                       | 0.98907 | 0.02720 | 0.96187  |
| 40                  | 0.98305 | 0.98093 | 0.00207  | 40                       | 0.93193 | 0.02100 | 0.96092  |
| 45                  | 0.97396 | 0.97244 | 0.00153  | 45                       | 0.97078 | 0.01757 | 0.95321  |
| 50                  | 0.96085 | 0.95976 | 0.00103  | 50                       | 0.95393 | 0.01399 | 0.93999  |
| 55                  | 0.93486 | 0.93396 | 0.00090  | 55                       | 0.92348 | 0.00994 | 0.91355  |
| 60                  | 0.89010 | 0.83928 | 0.00082  | 60                       | 0.87453 | 0.00903 | 0.86545  |
| 65                  | 0.81961 | 0.81387 | 0.00074  | 65                       | 0.80031 | 0.00732 | 0.79299  |
| 70                  | 1.36596 | 1.36253 | 0.00343  | 70                       | 1.24082 | 0.03050 | 1.21032  |

over all age groups lead to Table 13, which presents the average number of regional boundary crossings a person is expected to make during a lifetime.

Table 13. Net migraproduction rates.

| Region of<br>outmigration | Region of birth |           | Region of<br>outmigration | Region of birth |           |
|---------------------------|-----------------|-----------|---------------------------|-----------------|-----------|
|                           | FRG             | W. Berlin |                           | GDR             | E. Berlin |
| FRG                       | 0.042208        | 0.022238  | GDR                       | 0.072577        | 0.018615  |
| W. Berlin                 | 0.024186        | 0.821204  | E. Berlin                 | 0.018137        | 0.448234  |
| Total                     | 0.066394        | 0.843442  |                           | 0.090719        | 0.466849  |

According to Table 13, a person born in West Berlin will outmigrate from any region on the average of 0.84 times during his lifetime, 0.82 times out of his region of birth, and 0.02 times out of the FRG. The results show that mobility, as measured by the net migraproduction rate, is highest for West Berliners with East Berliners following. This is only true with respect to the mobility between the corresponding two regions with intraregional migration excluded. The results will change if moves within a given region are taken into account.

The relative importance of each region as a region of origin is given in Table 14. The net migraproduction allocation denotes the fraction of the region-of-residence-specific net migraproduction rate of a region to its total net migraproduction rate, or stated another way, the fraction of the migrations out of region j made by a person who was born in region i. Of the total number of outmigrations a person born in West Berlin (region i) will make, 97.36 percent will be out of this region and 2.63 percent will be made out of the FRG (region j).

Table 14. Net migraproduction allocations.

| Region of<br>outmigration | Region of origin |           | Region of<br>outmigration | Region of origin |           |
|---------------------------|------------------|-----------|---------------------------|------------------|-----------|
|                           | FRG              | W. Berlin |                           | GDR              | E. Berlin |
| FRG                       | 0.635721         | 0.026365  | GDR                       | 0.800065         | 0.039874  |
| W. Berlin                 | 0.364279         | 0.973635  | E. Berlin                 | 0.199935         | 0.960126  |
| Total                     | 1.000            | 1.000     |                           | 1.000            | 1.000     |

Analogous to migration's net migraproduction rates are fertility's net reproduction rates, which are obtained by multiplying the observed fertility rates by the number of years each birth cohort has lived in each region. They denote the number of children with which a person is expected to be replaced, according to given age-specific fertility and mortality rates for a particular year.

Table 15 gives the net reproduction rates by place of birth of parent and place of birth of child for 1974/1975. The net reproduction rate ranges from 0.678 in West Berlin to 0.784 in the GDR. A person born in West Berlin, for example, will be expected to have 0.678 children, 0.379 born in the FRG and only 0.299 in his home region. The column totals show that a person born in any of the four regions will be replaced by less than one person in the next generation. So fertility in all regions is below the replacement level.

As with the net migraproduction allocation, the net reproduction allocation is defined as the proportion of the total net reproduction rate that is accorded to a particular region. Table 16 shows that only a West Berlin-born person is more likely to have his children born in another region than his region of birth. A person born in East Berlin, for example, can expect 67.94 percent of his children also to be born in that region and 32.05 percent to be born in the GDR.



Table 15. Net reproduction rates.

| Region of birth<br>of child | Region of birth<br>of parent |           | Region of birth<br>of child | Region of birth<br>of parent |           |
|-----------------------------|------------------------------|-----------|-----------------------------|------------------------------|-----------|
|                             | FRG                          | W. Berlin |                             | GDR                          | E. Berlin |
| FRG                         | 0.697880                     | 0.379268  | GDR                         | 0.753276                     | 0.238460  |
| W. Berlin                   | 0.009227                     | 0.299208  | E. Berlin                   | 0.031531                     | 0.505524  |
| Total                       | 0.707107                     | 0.678477  | Total                       | 0.784807                     | 0.743984  |

Table 16. Net reproduction allocations.

| Region of birth<br>of child | Region of birth<br>of parent |           | Region of birth<br>of child | Region of birth<br>of parent |           |
|-----------------------------|------------------------------|-----------|-----------------------------|------------------------------|-----------|
|                             | FRG                          | W. Berlin |                             | GDR                          | E. Berlin |
| FRG                         | 0.986951                     | 0.559000  | GDR                         | 0.959823                     | 0.320518  |
| W. Berlin                   | 0.013049                     | 0.441000  | E. Berlin                   | 0.040177                     | 0.679482  |
| Total                       | 1.000000                     | 1.000000  | Total                       | 1.000000                     | 1.000000  |

### 3.3 Population Projection toward Stability

Multiregional life table statistics are independent of the observed age structure and regional distribution of the population. To study the short- and medium-term impacts of the population structure, a discrete model of multiregional population growth is used. The projection matrix is generated from the multiregional life table and observed fertility rates. The regional age schedules of fertility, mortality, and migration are assumed to remain at the levels of the base years. Appendix E gives the projection of multiregional population development as it was computed for the next 50 years. It contains the regional and total population, along with its proportional distributions across ages and regions. In addition, the mean

age (M.AG), the regional shares (SHA) of the total population, and the growth ratio ( $\lambda_m$ ) of the previous period are also given.

The population of East Berlin is expected to grow from the 1.098 million figure of 1975 to a maximum of 1.218 in the year 2010. During the same period, the population of the GDR will decline from 15.033 million to 13.653 million. From 2010 on, both regions are expected to lose population. The intermediate growth of East Berlin shown in these projections is caused by the different age structure of the population and the migration gains in the fertile ages.

The population of West Berlin as well as of the FRG is expected to decline, with West Berlin losing 44.30 percent of its population from the year 1974 to 2024 and the FRG losing 22.71 percent. This decline is due to the three factors that determine population growth, which are all unfavorable for West Berlin. It has a low fertility rate, a heavy outmigration rate, and a high share of elderly people. The influence of the present elderly age profile, however, vanishes during the projection period. One should note that the results achieved by using a two-region aggregation cannot be equal to the results of the four-region case as used in Mohs (1980). Only in the case of identical mortality, fertility, and migration rates in all regions would both aggregations give the same result.

If one projects a population with a constant growth matrix for a long enough period of time, then the ultimate age and spatial distribution is independent of the current distribution, and is determined by the fundamental demographic parameters. All age groups and regions of this stable population will grow with the same stable growth rate. A total population which is distributed as the stable population and would lead, in the long run, toward the same population as the observed population, is called the stable equivalent. The concept of the stable equivalent enables one to separate the part of change due to the demographic schedules from the part of change due to the age and regional distribution of the initial population.

Table 17 shows a stable equivalent of 90.6 million for the FRG and 2.0 million for West Berlin. The percentage distribution gives the corresponding stable age composition for each region.

The stable population of all four regions will be older than the 1974-1975 population. The mean age of West Berlin increases by two years but that of the FRG by eight years. As a result of this, the mean age of the stable population is one year higher in the FRG than in West Berlin. The same is true for East Berlin and the GDR, however, their initial mean ages differ only by 0.01 years. West Berlin shows a loss in share terms of 1.0 percent. At the same time, East Berlin's share grew from 6.8 to 10.7 percent. Having reached stability the constant annual growth rate is -0.013 for FRG-West Berlin and -0.009 for GDR-East Berlin.

#### 4. DIFFERENCES IN THE AGE STRUCTURE

##### 4.1 Current Age Structure

The current age structure of the FRG and GDR has been influenced mainly by fertility and mortality since 1900. Migration does not play an important role because these regional units are too big to be influenced in their age structure by migration only from and to Berlin. Berlin, however, is a small region and migration has to be taken into account.

Appendix D gives the age profile of the four populations under consideration. The FRG and the GDR show a more uniform pattern than East and West Berlin. West Berlin has the most diverse age structure. The similarity between the GDR and the FRG is not surprising because these two regions have been subject to the same historical events until 1945. The age profile itself tells this history (Appendix E).

The low percentage of population in the 55-60 age group is due to the low number of births during the First World War. The share of people born between 1920 and 1934 was nearly the same in these three age groups if one looks at West Berlin and the FRG. In East Berlin and the GDR the percentage increased.

Table 17. Stable equivalent and percentage distribution for  
FRG-West Berlin and GDR-East Berlin.

| stable equivalent to original population<br>***** |           |           |          | stable equivalent to original population<br>***** |           |           |          |
|---|-----------|-----------|----------|---|-----------|-----------|----------|
| age   | total     | frg       | w-berlin | age   | total     | gdr       | e-berlin |
| 0   | 3861153.  | 3777821.  | 83332.   | 0   | 1060067.  | 946117.   | 113950.  |
| 5   | 4066636.  | 3932595.  | 84039.   | 5   | 1097062.  | 979157.   | 117905.  |
| 10  | 4327702.  | 4241321.  | 86381.   | 10  | 1144694.  | 1022743.  | 121950.  |
| 15  | 4599382.  | 4506335.  | 93547.   | 15  | 1193291.  | 1066644.  | 126648.  |
| 20  | 4880307.  | 4763889.  | 116418.  | 20  | 1241829.  | 1109052.  | 132777.  |
| 25  | 5177112.  | 5037910.  | 139202.  | 25  | 1291970.  | 1150366.  | 141604.  |
| 30  | 5488014.  | 5341493.  | 146521.  | 30  | 1343265.  | 1192391.  | 150873.  |
| 35  | 5805285.  | 5554283.  | 151003.  | 35  | 1393865.  | 1236321.  | 157044.  |
| 40  | 6121027.  | 5966134.  | 154892.  | 40  | 1440932.  | 1279116.  | 161816.  |
| 45  | 6407135.  | 6250570.  | 156565.  | 45  | 1480527.  | 1315305.  | 165322.  |
| 50  | 6636175.  | 6480485.  | 155690.  | 50  | 1507000.  | 1340159.  | 166341.  |
| 55  | 6778050.  | 6626056.  | 151994.  | 55  | 1512539.  | 1347076.  | 165463.  |
| 60  | 6759669.  | 6615163.  | 144501.  | 60  | 1476247.  | 1316954.  | 159292.  |
| 65  | 6443517.  | 6316502.  | 132015.  | 65  | 1371069.  | 1225820.  | 145249.  |
| 70  | 5704116.  | 5591068.  | 113048.  | 70  | 1171829.  | 1050470.  | 121359.  |
| 75  | 9719590.  | 9537141.  | 182449.  | 75  | 1657472.  | 1500153.  | 157319.  |
| total   | 92780368. | 90689768. | 2091597. | total   | 21383756. | 19079342. | 2305414. |

| percentage distribution<br>----- |           |           |           | percentage distribution<br>----- |           |           |           |
|----------------------------------|-----------|-----------|-----------|----------------------------------|-----------|-----------|-----------|
| age                              | total     | frg       | w-berlin  | age                              | total     | gdr       | e-berlin  |
| 0                                | 4.1616    | 4.1657    | 3.9841    | 0                                | 4.9573    | 4.9591    | 4.9427    |
| 5                                | 4.3831    | 4.3915    | 4.0179    | 5                                | 5.1304    | 5.1323    | 5.1143    |
| 10                               | 4.6645    | 4.6768    | 4.1299    | 10                               | 5.3531    | 5.3608    | 5.2397    |
| 15                               | 4.9573    | 4.9690    | 4.4725    | 15                               | 5.5804    | 5.5909    | 5.4935    |
| 20                               | 5.2601    | 5.2530    | 5.5660    | 20                               | 5.8073    | 5.8131    | 5.7594    |
| 25                               | 5.5800    | 5.5552    | 6.6553    | 25                               | 6.0418    | 6.0297    | 6.1423    |
| 30                               | 5.9151    | 5.8399    | 7.0052    | 30                               | 6.2817    | 6.2500    | 6.5443    |
| 35                               | 6.2570    | 6.2348    | 7.2195    | 35                               | 6.5183    | 6.4329    | 6.3120    |
| 40                               | 6.5973    | 6.5787    | 7.4055    | 40                               | 6.7334    | 6.7045    | 7.0189    |
| 45                               | 6.9057    | 6.8923    | 7.4854    | 45                               | 6.9241    | 6.8942    | 7.1710    |
| 50                               | 7.1526    | 7.1459    | 7.4436    | 50                               | 7.0474    | 7.0245    | 7.2369    |
| 55                               | 7.3055    | 7.3064    | 7.2669    | 55                               | 7.0733    | 7.0603    | 7.1772    |
| 60                               | 7.2857    | 7.2944    | 6.9086    | 60                               | 6.9036    | 6.9029    | 6.9095    |
| 65                               | 6.9503    | 6.9650    | 6.3117    | 65                               | 6.4117    | 6.4252    | 6.3004    |
| 70                               | 6.1480    | 6.1651    | 5.4049    | 70                               | 5.4800    | 5.5051    | 5.2641    |
| 75                               | 10.4759   | 10.5163   | 8.7230    | 75                               | 7.7511    | 7.8631    | 6.8239    |
| total                            | 100.0000  | 100.0000  | 100.0000  | total                            | 100.0000  | 100.0000  | 100.0000  |
| m.ag                             | 44.7312   | 44.7523   | 43.8128   | m.ag                             | 42.1511   | 42.1950   | 41.7378   |
| sha                              | 100.0000  | 97.7456   | 2.2544    | sha                              | 100.0000  | 39.2189   | 10.7811   |
| lam                              | 0.937974  | 0.937974  | 0.937973  | lam                              | 0.956569  | 0.956569  | 0.956569  |
| r                                | -0.012807 | -0.012807 | -0.012807 | r                                | -0.003380 | -0.003380 | -0.003380 |

A peak can be observed for the two age groups 30 to 39, which represents the persons born during the Third Reich. The drop in the share of the population in the 15-29 age groups is caused by the low fertility in the post-war period. Only West Berlin had a higher percentage of population of this age group, due to immigration as previously mentioned. A second peak was reached in the 1960s followed by a very low number of persons born between 1970 and 1974.

East Berlin follows the GDR pattern. For the 40-80-year age group, the profiles are nearly identical. The differences in the other age groups are mainly caused by migration. West Berlin's profile still has some similarities with the age structure of the FRG. The heavy migration flows within the past 30 years have influenced the age composition considerably. A very high percentage of the population is older than 65 (22.19%) but only 15.88 percent is between 0 and 15 years old. The corresponding values for the FRG are 14.01 percent (65+) and 21.94 percent (0 to 15 years).

#### 4.2 Projected Age Structure

Appendix G shows the age profiles for the year 2024-2025. It is expected that there will be no differences between the age composition in the FRG and West Berlin by this time, and both regions are expected to have a high percentage of elderly people. The population of East Berlin and the GDR, on the contrary, are expected to have a higher percentage of young people. The profile for the 25-64 age groups are nearly the same for all four regions. Only the share of people in the last age group is higher in the FRG and West Berlin than in the other two regions. To trace the aging process it is useful to classify the age groups as follows

|                          |                    |
|--------------------------|--------------------|
| (1) pre-labor force age  | 0-14 years         |
| (2) labor force age      | 15-64 years        |
| (3) post-labor force age | more than 64 years |
| (4) non-labor force age  | (1) + (3)          |

The percentage of young people aged 0 to 14 has been and is expected to decline in all regions (Table 18). The highest decline is observed in the FRG (-8%), the lowest in West Berlin (-3.5%). The share of people older than 65 has been decreasing in all regions but by 1995, a change is expected to take place that will lead to final values for the FRG and GDR higher than those of the base years, 1974 and 1975. In 2024, the FRG is expected to have 6 percent more people in the post-labor force ages than in 1974; West Berlin, however, will have less in these ages than in the initial 1974 year. The share of the labor force age group has a peak between 1995 and 2000. In the year 2024, West Berlin will have gained 7 percent in labor force population compared to 1974, and about 65.8 percent of the population of the GDR and FRG will be in the labor force ages in 2024/2025.

Table 19 presents the number of people aged 65 or more by every 100 people in the labor force age. These figures are of special interest for the pension system because they show how many people in retirement ages have to be maintained by every 100 persons between the ages of 15 and 64. This is a very important figure because the German pension system is not based on savings. The pensions for the older generation are paid entirely by the existing labor force.

Table 19 shows that in each successive year after 1979 through 1994, there will be less elderly people to be maintained by the labor force population than in 1974. In the long run, however, the expected number of elderly people will exceed the present rates, which will pose a problem for all four regions. This will bring about an especially serious problem for the FRG where the expected number of people 65+ per 100 persons in the labor force in 2024 is 31.15 rather than the 20.06 people expected for 1994. The projections for East and West Berlin will be 5 percent under those of the GDR and FRG.

Table 18. Data based on the projection.

| FRG (in percent) |            |       |       |         | W. Berlin (in percent) |       |       |         |
|------------------|------------|-------|-------|---------|------------------------|-------|-------|---------|
| Year             | Age groups |       |       |         |                        |       |       |         |
|                  | 0-14       | 15-64 | 64+   | (1)+(3) | 0-14                   | 15-64 | 65+   | (1)+(3) |
| 1974             | 21.94      | 64.05 | 14.01 | 35.95   | 15.88                  | 61.93 | 22.19 | 38.07   |
| 1979             | 18.63      | 65.31 | 16.06 | 34.69   | 14.86                  | 62.58 | 22.56 | 37.42   |
| 1984             | 16.04      | 69.34 | 14.62 | 3.066   | 13.59                  | 67.27 | 19.14 | 32.73   |
| 1989             | 16.04      | 69.28 | 14.68 | 30.72   | 13.78                  | 70.05 | 16.17 | 29.95   |
| 1994             | 16.63      | 69.44 | 13.93 | 30.56   | 14.27                  | 72.66 | 13.07 | 27.39   |
| 1999             | 15.93      | 67.89 | 16.18 | 32.11   | 13.93                  | 72.21 | 13.86 | 27.79   |
| 2004             | 15.00      | 67.06 | 17.94 | 32.94   | 13.31                  | 71.16 | 15.53 | 28.84   |
| 2009             | 14.06      | 66.79 | 19.15 | 33.21   | 12.50                  | 69.74 | 17.70 | 30.26   |
| 2014             | 13.45      | 66.41 | 20.14 | 33.59   | 12.04                  | 48.92 | 19.04 | 31.08   |
| 2019             | 13.52      | 66.31 | 20.17 | 33.69   | 12.09                  | 68.61 | 19.30 | 31.39   |
| 2024             | 13.65      | 65.84 | 20.51 | 34.16   | 12.35                  | 69.15 | 18.50 | 30.85   |

| GDR (in percent) |       |       |       |       | E. Berlin (in percent) |       |       |       |
|------------------|-------|-------|-------|-------|------------------------|-------|-------|-------|
| Year             |       |       |       |       |                        |       |       |       |
| 1975             | 21.25 | 62.37 | 16.38 | 37.63 | 21.29                  | 62.58 | 16.13 | 37.42 |
| 1980             | 18.59 | 65.02 | 16.39 | 34.98 | 18.46                  | 66.48 | 15.06 | 33.52 |
| 1985             | 17.67 | 68.48 | 13.85 | 31.52 | 17.27                  | 70.61 | 12.12 | 29.39 |
| 1990             | 18.38 | 68.99 | 12.63 | 31.01 | 17.95                  | 72.15 | 9.90  | 27.85 |
| 1995             | 18.78 | 69.03 | 12.19 | 30.97 | 18.73                  | 71.89 | 9.38  | 28.11 |
| 2000             | 17.75 | 68.20 | 14.05 | 31.80 | 18.34                  | 70.57 | 11.09 | 29.43 |
| 2005             | 16.53 | 67.38 | 16.09 | 32.62 | 17.19                  | 69.07 | 13.74 | 30.93 |
| 2010             | 15.69 | 67.84 | 16.47 | 32.16 | 16.03                  | 69.02 | 14.95 | 30.98 |
| 2015             | 15.46 | 67.99 | 16.55 | 32.01 | 15.60                  | 69.61 | 14.79 | 30.39 |
| 2020             | 15.84 | 67.09 | 17.07 | 32.91 | 15.98                  | 69.27 | 14.75 | 30.73 |
| 2025             | 15.85 | 65.71 | 18.44 | 34.29 | 16.31                  | 68.42 | 15.27 | 31.58 |

Table 19. The number of 65+ year-old people expected to be living in the four regions for every 100 labor force residents.

| Year | FRG   | W. Berlin | Year | GDR   | E. Berlin |
|------|-------|-----------|------|-------|-----------|
| 1974 | 21.92 | 35.83     | 1975 | 26.26 | 25.78     |
| 1979 | 24.59 | 36.05     | 1980 | 25.21 | 22.65     |
| 1984 | 21.08 | 28.45     | 1985 | 20.22 | 17.16     |
| 1989 | 21.19 | 23.08     | 1990 | 18.31 | 13.72     |
| 1994 | 20.06 | 17.99     | 1995 | 17.66 | 13.05     |
| 1999 | 23.83 | 19.19     | 2000 | 20.60 | 15.71     |
| 2004 | 26.75 | 21.82     | 2005 | 23.88 | 19.89     |
| 2009 | 28.67 | 25.38     | 2010 | 24.28 | 21.66     |
| 2014 | 30.33 | 27.63     | 2015 | 24.34 | 21.25     |
| 2019 | 30.42 | 28.13     | 2020 | 25.44 | 21.29     |
| 2024 | 31.15 | 26.75     | 2025 | 28.06 | 22.32     |

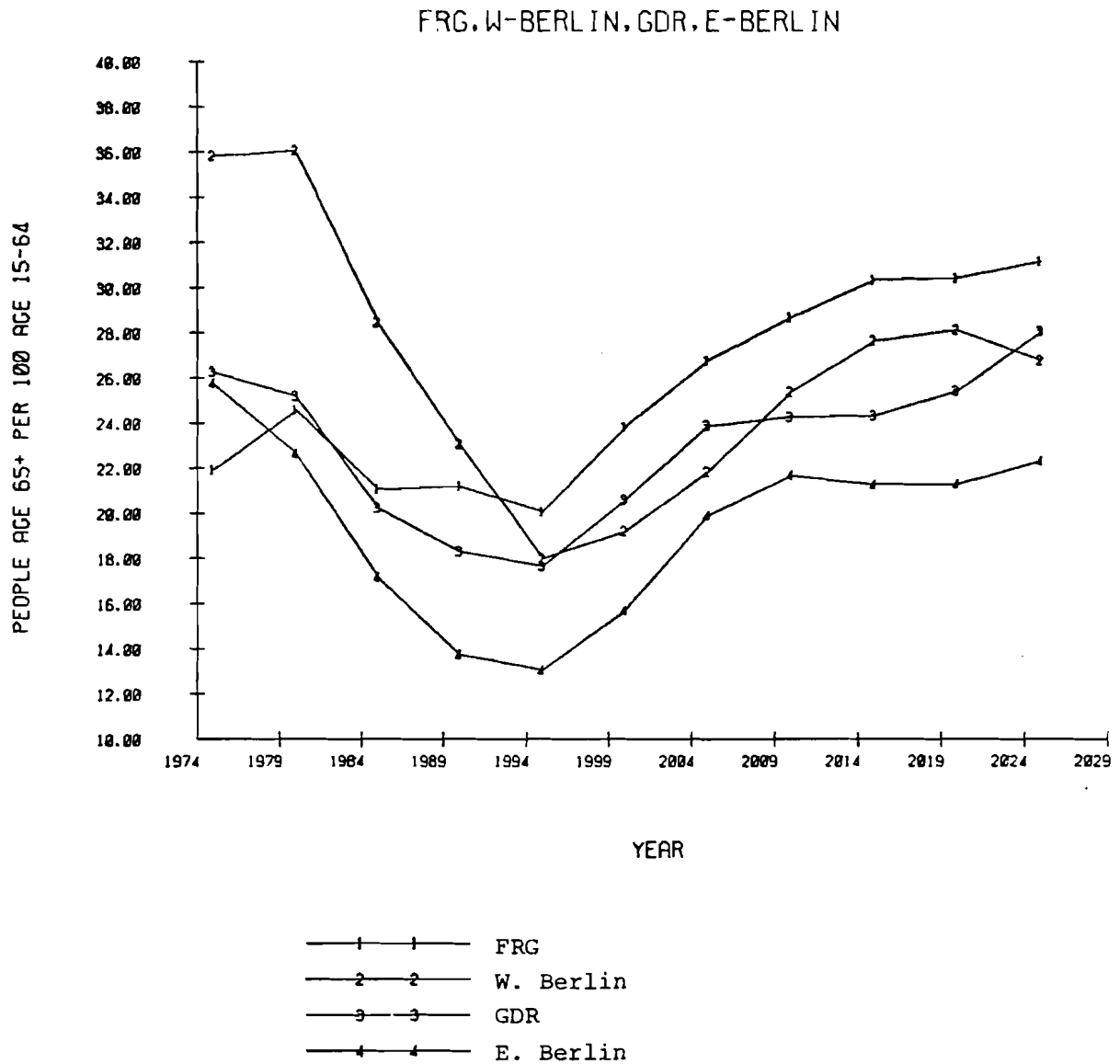


Figure 3. Plotting of data in Table 19.

In the short run, this rate is determined by the age composition of the population. After 15 years, the present fertility rate becomes influential, but the overall age structure remains the main factor.



## 5. CONCLUSION

As mentioned in a previous chapter all attempts of the government of the FRG to encourage immigration to West Berlin failed to balance the age composition of West Berlin. Also for the future no significant change can be expected because the FRG itself will have a considerably higher share of people in the post-labor force ages. This process is mainly determined by the present age structure of the population. A fertility rate which is below replacement level causes a decline of the total population in all four regions. A trend toward a high share of elderly people can also be observed in the GDR and East Berlin, however it is more moderate.

In concluding this case study, I would like to mention a simulation program developed at IIASA that can be used in addition. In the program used for this study, the population is projected with a constant growth matrix. The simulation program provides the possibility to change the mortality, fertility, and migration rates in each projection step to fit new data. As mentioned in section 2.1, the input data are based on 1974-1975. In the meantime, the fertility rates were declining significantly in the FRG. To take this into account, the old rates were applied for the 1974 to 1979 projection and the new rates from that time on. The short-run projection is not affected by this change. Only in the long run, slight differences appear which do not alter the conclusions drawn from the program using a constant growth matrix.

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APPENDIX A: OBSERVED POPULATION, NUMBER OF  
BIRTHS, DEATHS, AND MIGRANTS BY AGE AND REGION  
(BOTH SEXES): 1974 AND 1975

observed population characteristics  
=====

| region frg |            |         |         |                                |        |
|------------|------------|---------|---------|--------------------------------|--------|
| -----      |            |         |         |                                |        |
| age        | population | births  | deaths  | migration from frg to w-berlin |        |
| 0          | 3400920.   | 0.      | 15026.  | 0.                             | 1712.  |
| 5          | 4313345.   | 0.      | 2077.   | 0.                             | 1396.  |
| 10         | 4941930.   | 0.      | 1450.   | 0.                             | 309.   |
| 15         | 4363352.   | 59452.  | 4043.   | 0.                             | 3197.  |
| 20         | 4137431.   | 196432. | 4217.   | 0.                             | 10633. |
| 25         | 3737265.   | 176579. | 3663.   | 0.                             | 6064.  |
| 30         | 4463845.   | 111346. | 5731.   | 0.                             | 3930.  |
| 35         | 4751972.   | 52172.  | 3559.   | 0.                             | 2499.  |
| 40         | 3775017.   | 12518.  | 9728.   | 0.                             | 1431.  |
| 45         | 3760743.   | 639.    | 17697.  | 0.                             | 953.   |
| 50         | 3630684.   | 0.      | 24721.  | 0.                             | 695.   |
| 55         | 2304303.   | 0.      | 23792.  | 0.                             | 450.   |
| 60         | 3416893.   | 0.      | 56210.  | 0.                             | 563.   |
| 65         | 3162652.   | 0.      | 90155.  | 0.                             | 643.   |
| 70         | 2435134.   | 0.      | 113316. | 0.                             | 425.   |
| 75         | 2767635.   | 0.      | 304760. | 0.                             | 547.   |
| total      | 59968632.  | 609438. | 690236. | 0.                             | 36107. |

| region w-berlin |            |        |        |                                |          |
|-----------------|------------|--------|--------|--------------------------------|----------|
| -----           |            |        |        |                                |          |
| age             | population | births | deaths | migration from w-berlin to frg | w-berlin |
| 0               | 92536.     | 0.     | 409.   | 2953.                          | 0.       |
| 5               | 117959.    | 0.     | 43.    | 2532.                          | 0.       |
| 10              | 112942.    | 0.     | 40.    | 1551.                          | 0.       |
| 15              | 95020.     | 1646.  | 65.    | 2132.                          | 0.       |
| 20              | 137619.    | 5700.  | 150.   | 7936.                          | 0.       |
| 25              | 141605.    | 5554.  | 134.   | 7305.                          | 0.       |
| 30              | 177393.    | 3754.  | 324.   | 6650.                          | 0.       |
| 35              | 153267.    | 1337.  | 397.   | 3673.                          | 0.       |
| 40              | 105930.    | 237.   | 407.   | 2107.                          | 0.       |
| 45              | 104375.    | 15.    | 637.   | 1712.                          | 0.       |
| 50              | 107671.    | 0.     | 838.   | 1597.                          | 0.       |
| 55              | 37543.     | 0.     | 1124.  | 1400.                          | 0.       |
| 60              | 148344.    | 0.     | 2735.  | 2153.                          | 0.       |
| 65              | 155705.    | 0.     | 4963.  | 2273.                          | 0.       |
| 70              | 126369.    | 0.     | 6369.  | 1310.                          | 0.       |
| 75              | 169525.    | 0.     | 19657. | 1563.                          | 0.       |
| total           | 2034366.   | 13243. | 38492. | 49412.                         | 0.       |

observed population characteristics  
=====

| region |            | gdr     |         |                                |        |
|--------|------------|---------|---------|--------------------------------|--------|
| -----  |            | -----   |         |                                |        |
| age    | population | births  | deaths  | migration from<br>gdr e-berlin | gdr to |
| 0      | 353751.    | 0.      | 3090.   | 0.                             | 1438.  |
| 5      | 1076632.   | 0.      | 450.    | 0.                             | 1072.  |
| 10     | 1266071.   | 4.      | 442.    | 0.                             | 783.   |
| 15     | 1197532.   | 11325.  | 947.    | 0.                             | 2664.  |
| 20     | 1189325.   | 43090.  | 1236.   | 0.                             | 3332.  |
| 25     | 859163.    | 61151.  | 758.    | 0.                             | 2534.  |
| 30     | 960265.    | 25111.  | 1245.   | 0.                             | 1356.  |
| 35     | 1169712.   | 11404.  | 1973.   | 0.                             | 895.   |
| 40     | 942968.    | 4153.   | 2647.   | 0.                             | 445.   |
| 45     | 837736.    | 690.    | 3583.   | 0.                             | 333.   |
| 50     | 795918.    | 0.      | 5207.   | 0.                             | 202.   |
| 55     | 561177.    | 0.      | 5325.   | 0.                             | 113.   |
| 60     | 308111.    | 0.      | 14313.  | 0.                             | 156.   |
| 65     | 369064.    | 0.      | 25620.  | 0.                             | 161.   |
| 70     | 736518.    | 0.      | 38347.  | 0.                             | 139.   |
| 75     | 859199.    | 0.      | 109403. | 0.                             | 245.   |
| total  | 15033192.  | 161928. | 214606. | 0.                             | 15923. |

| region |            | e-berlin |        |  |    |
|--------|------------|----------|--------|--|----|
| -----  |            | -----    |        |  |    |
| age    | population | births   | deaths | migration from e-berlin to<br>gdr e-berlin |    |
| 0      | 62653.     | 0.       | 221.   | 895.                                       | 0. |
| 5      | 79909.     | 0.       | 30.    | 682.                                       | 0. |
| 10     | 92259.     | 0.       | 30.    | 775.                                       | 0. |
| 15     | 73156.     | 2.       | 53.    | 1251.                                      | 0. |
| 20     | 72651.     | 1428.    | 69.    | 1614.                                      | 0. |
| 25     | 66683.     | 5451.    | 62.    | 1024.                                      | 0. |
| 30     | 90215.     | 2840.    | 112.   | 305.                                       | 0. |
| 35     | 100196.    | 1426.    | 164.   | 613.                                       | 0. |
| 40     | 76735.     | 505.     | 212.   | 387.                                       | 0. |
| 45     | 62934.     | 89.      | 287.   | 226.                                       | 0. |
| 50     | 48528.     | 0.       | 357.   | 181.                                       | 0. |
| 55     | 33995.     | 0.       | 453.   | 33.  | 0. |
| 60     | 56360.     | 0.       | 1171.  | 126.                                       | 0. |
| 65     | 64747.     | 0.       | 2194.  | 126.                                       | 0. |
| 70     | 52249.     | 0.       | 3005.  | 90.  | 0. |
| 75     | 60299.     | 0.       | 3333.  | 151.                                       | 0. |
| total  | 1093174.   | 11741.   | 16753. | 9120.                                      | 0. |

APPENDIX B: PERCENTAGE DISTRIBUTIONS OF THE  
OBSERVED POPULATION BY AGE AND  
REGION (BOTH SEXES): 1974 AND  
1975

percentage distributions  
\*\*\*\*\*

| region |            | frg      |          |                                |          |
|--------|------------|----------|----------|--------------------------------|----------|
| -----  |            | -----    |          |                                |          |
| age    | population | births   | deaths   | migration from<br>frg w-berlin | frg to   |
| 0      | 5.6712     | 0.0000   | 2.1769   | 0.0000                         | 4.7415   |
| 5      | 3.0343     | 0.0000   | 0.3009   | 0.0000                         | 3.8663   |
| 10     | 3.2409     | 0.0000   | 0.2101   | 0.0000                         | 2.2406   |
| 15     | 7.2769     | 9.7552   | 0.5357   | 0.0000                         | 3.8542   |
| 20     | 6.8993     | 32.2399  | 0.6110   | 0.0000                         | 29.5371  |
| 25     | 6.3154     | 23.9741  | 0.5307   | 0.0000                         | 16.7945  |
| 30     | 7.4436     | 18.2703  | 0.8375   | 0.0000                         | 11.0223  |
| 35     | 7.9241     | 8.5607   | 1.2415   | 0.0000                         | 6.9211   |
| 40     | 6.2950     | 2.0540   | 1.4094   | 0.0000                         | 4.1017   |
| 45     | 6.2712     | 0.1459   | 2.5639   | 0.0000                         | 2.6532   |
| 50     | 6.0543     | 0.0000   | 3.5815   | 0.0000                         | 1.9243   |
| 55     | 3.8425     | 0.0000   | 3.4469   | 0.0000                         | 1.2463   |
| 60     | 5.6973     | 0.0000   | 3.1479   | 0.0000                         | 1.5593   |
| 65     | 5.2738     | 0.0000   | 13.0616  | 0.0000                         | 1.7947   |
| 70     | 4.1441     | 0.0000   | 17.1414  | 0.0000                         | 1.1771   |
| 75     | 4.6151     | 0.0000   | 44.1530  | 0.0000                         | 1.5149   |
| total  | 100.0000   | 100.0000 | 100.0000 | 0.0000                         | 100.0000 |
| m.age  | 36.4720    | 27.0193  | 67.4512  | 0.0000                         | 23.6355  |

| region |            | w-berlin |          |                                |                             |
|--------|------------|----------|----------|--------------------------------|-----------------------------|
| -----  |            | -----    |          |                                |                             |
| age    | population | births   | deaths   | migration from<br>frg w-berlin | w-berlin to<br>frg w-berlin |
| 0      | 4.5487     | 0.0000   | 1.0626   | 5.9354                         | 0.0000                      |
| 5      | 5.7933     | 0.0000   | 0.1117   | 5.2255                         | 0.0000                      |
| 10     | 5.5517     | 0.0000   | 0.1039   | 3.1389                         | 0.0000                      |
| 15     | 4.6707     | 9.0226   | 0.1689   | 4.3147                         | 0.0000                      |
| 20     | 6.7647     | 31.2449  | 0.3397   | 16.0609                        | 0.0000                      |
| 25     | 6.9607     | 30.4446  | 0.4780   | 15.7953                        | 0.0000                      |
| 30     | 3.7446     | 20.5773  | 0.3417   | 13.4533                        | 0.0000                      |
| 35     | 7.5339     | 7.3238   | 1.0314   | 7.4334                         | 0.0000                      |
| 40     | 5.2095     | 1.2991   | 1.0574   | 4.2641                         | 0.0000                      |
| 45     | 5.1306     | 0.0322   | 1.7343   | 3.4647                         | 0.0000                      |
| 50     | 5.2926     | 0.0000   | 2.3070   | 3.2320                         | 0.0000                      |
| 55     | 4.3035     | 0.0000   | 2.9201   | 2.8333                         | 0.0000                      |
| 60     | 7.2919     | 0.0000   | 7.2353   | 4.3674                         | 0.0000                      |
| 65     | 7.6537     | 0.0000   | 12.8936  | 4.6102                         | 0.0000                      |
| 70     | 6.2117     | 0.0000   | 16.5463  | 2.6512                         | 0.0000                      |
| 75     | 3.3331     | 0.0000   | 51.0673  | 3.1632                         | 0.0000                      |
| total  | 100.0000   | 100.0000 | 100.0000 | 100.0000                       | 0.0000                      |
| m.age  | 41.7529    | 27.0036  | 69.9431  | 33.3071                        | 0.0000                      |

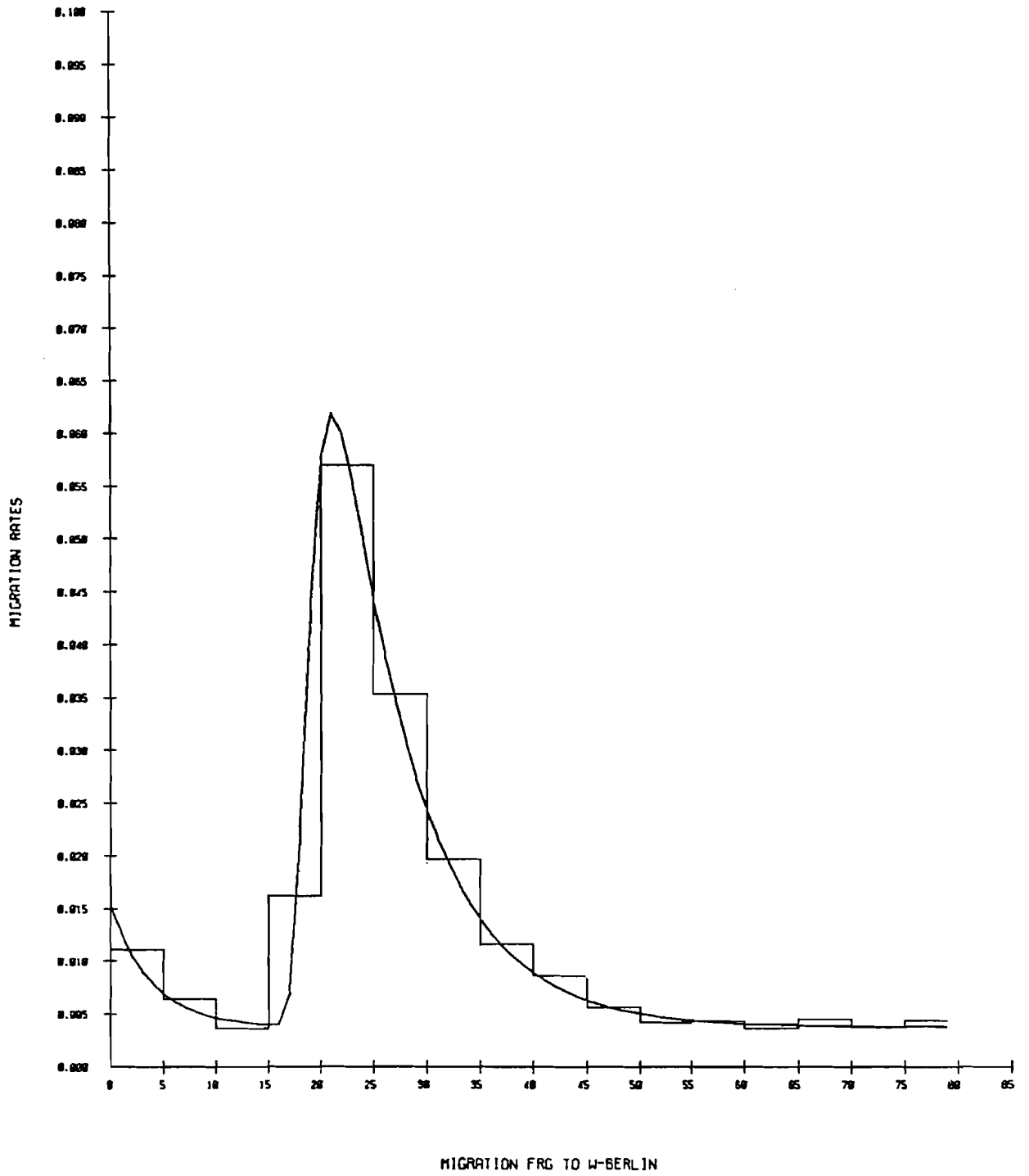
percentage distributions  
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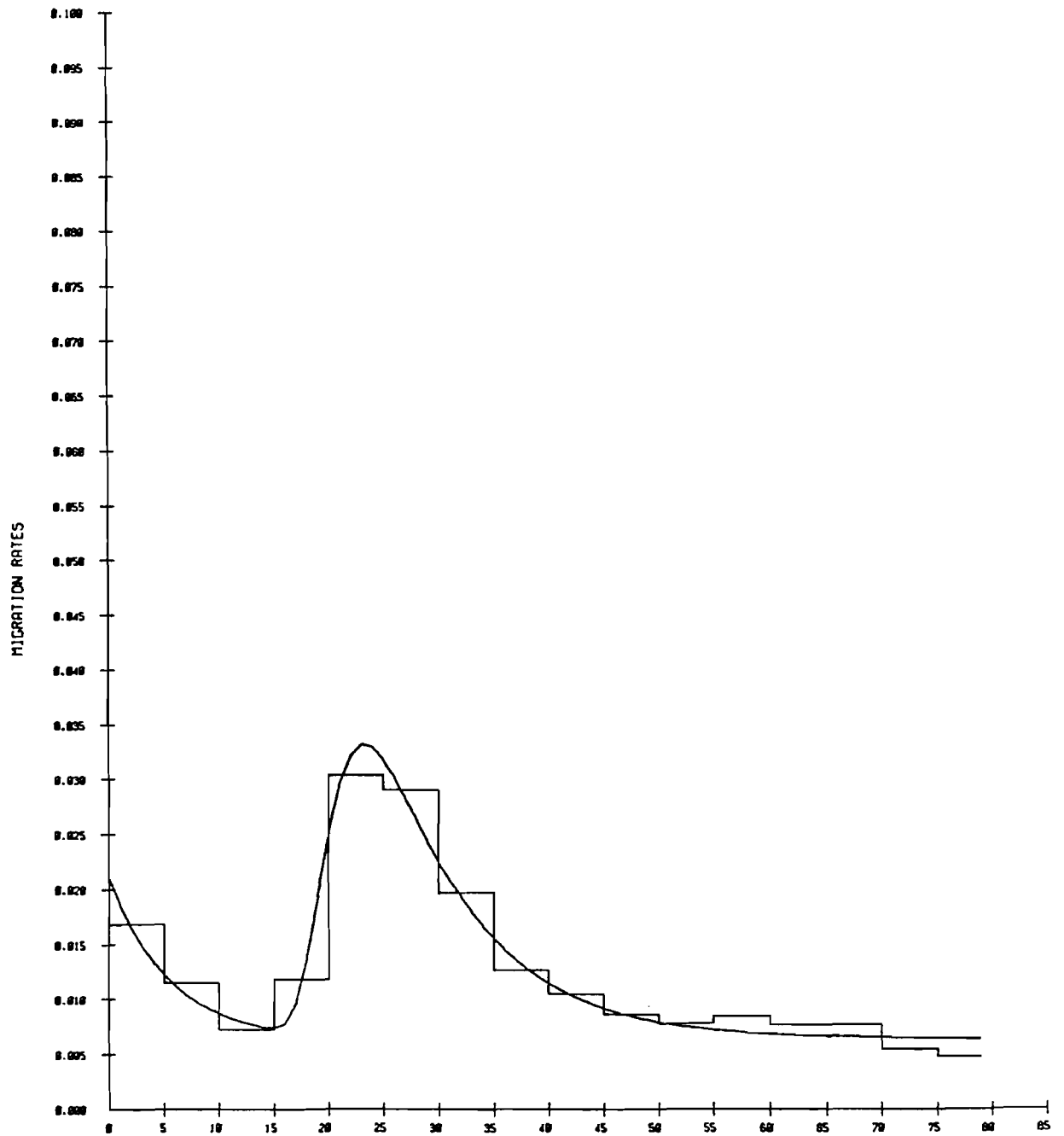
| region |            | gdr      |          |                                |          |
|--------|------------|----------|----------|--------------------------------|----------|
| -----  |            | -----    |          |                                |          |
| age    | population | births   | deaths   | migration from<br>gdr e-berlin | gdr to   |
| 0      | 5.6791     | 0.0000   | 1.4393   | 0.0000                         | 9.3450   |
| 5      | 7.1617     | 0.0000   | 0.2097   | 0.0000                         | 6.7324   |
| 10     | 8.4218     | 0.0025   | 0.2060   | 0.0000                         | 4.9174   |
| 15     | 7.9563     | 6.9933   | 0.4413   | 0.0000                         | 16.7305  |
| 20     | 7.9113     | 29.6934  | 0.5759   | 0.0000                         | 20.9257  |
| 25     | 5.7151     | 37.7643  | 0.3579   | 0.0000                         | 15.9141  |
| 30     | 6.3876     | 15.5075  | 0.5801   | 0.0000                         | 3.5160   |
| 35     | 7.7309     | 7.0426   | 0.9194   | 0.0000                         | 5.6203   |
| 40     | 6.2726     | 2.5647   | 1.2334   | 0.0000                         | 2.7947   |
| 45     | 5.9052     | 0.4261   | 1.6719   | 0.0000                         | 2.1227   |
| 50     | 5.2944     | 0.0000   | 2.4263   | 0.0000                         | 1.2636   |
| 55     | 3.7329     | 0.0000   | 2.4313   | 0.0000                         | 0.7037   |
| 60     | 5.3755     | 0.0000   | 6.6713   | 0.0000                         | 0.9797   |
| 65     | 5.7310     | 0.0000   | 11.9332  | 0.0000                         | 1.0111   |
| 70     | 4.3093     | 0.0000   | 17.3636  | 0.0000                         | 0.8730   |
| 75     | 5.7153     | 0.0000   | 50.9785  | 0.0000                         | 1.5387   |
| total  | 100.0000   | 100.0000 | 100.0000 | 0.0000                         | 100.0000 |
| m.age  | 37.1115    | 27.2649  | 59.6261  | 0.0000                         | 24.6315  |

| region |            | e-berlin |          |  |        |
|--------|------------|----------|----------|--|--------|
| -----  |            | -----    |          |  |        |
| age    | population | births   | deaths   | migration from e-berlin to<br>gdr e-berlin |        |
| 0      | 5.7052     | 0.0000   | 1.3183   | 9.8246                                     | 0.0000 |
| 5      | 7.1946     | 0.0000   | 0.1790   | 7.4731                                     | 0.0000 |
| 10     | 3.4011     | 0.0000   | 0.1790   | 3.4973                                     | 0.0000 |
| 15     | 6.6616     | 0.0170   | 0.3163   | 13.7171                                    | 0.0000 |
| 20     | 6.6156     | 12.1625  | 0.4117   | 17.6974                                    | 0.0000 |
| 25     | 6.0726     | 46.4271  | 0.3700   | 11.2231                                    | 0.0000 |
| 30     | 8.2150     | 24.1337  | 0.6683   | 9.8136                                     | 0.0000 |
| 35     | 9.1239     | 12.1455  | 0.9736   | 6.7215                                     | 0.0000 |
| 40     | 6.9375     | 4.3012   | 1.2651   | 4.2434                                     | 0.0000 |
| 45     | 5.7303     | 0.7530   | 1.7126   | 2.4731                                     | 0.0000 |
| 50     | 4.4190     | 0.0000   | 2.1303   | 1.9346                                     | 0.0000 |
| 55     | 3.5509     | 0.0000   | 2.7032   | 0.9101                                     | 0.0000 |
| 60     | 5.1777     | 0.0000   | 6.9377   | 1.3316                                     | 0.0000 |
| 65     | 5.8959     | 0.0000   | 13.0923  | 1.3316                                     | 0.0000 |
| 70     | 4.7573     | 0.0000   | 17.9317  | 0.9363                                     | 0.0000 |
| 75     | 5.4903     | 0.0000   | 49.7553  | 1.6557                                     | 0.0000 |
| total  | 100.0000   | 100.0000 | 100.0000 | 100.0000                                   | 0.0000 |
| m.age  | 37.1221    | 30.1109  | 69.6921  | 25.3893                                    | 0.0000 |

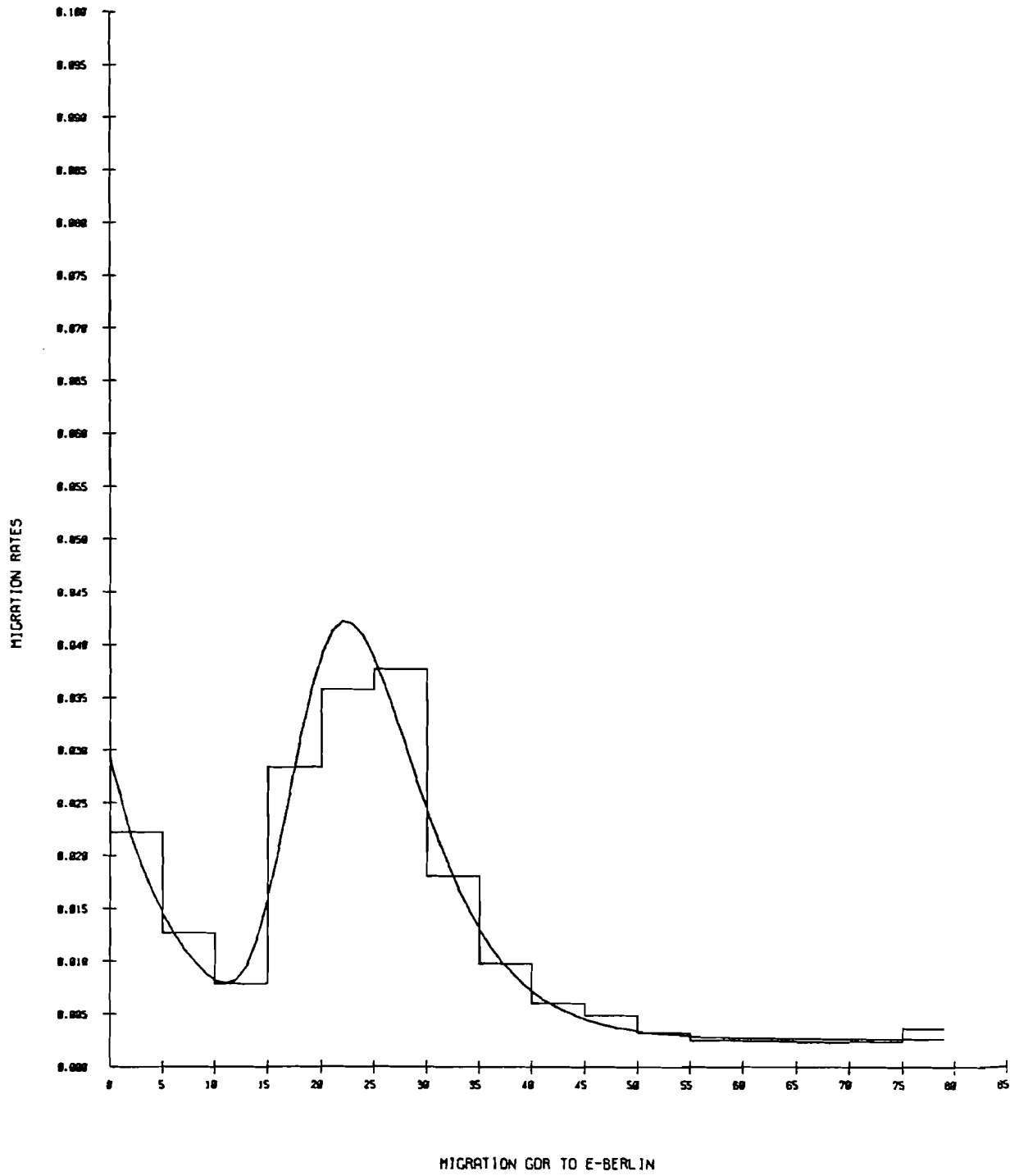


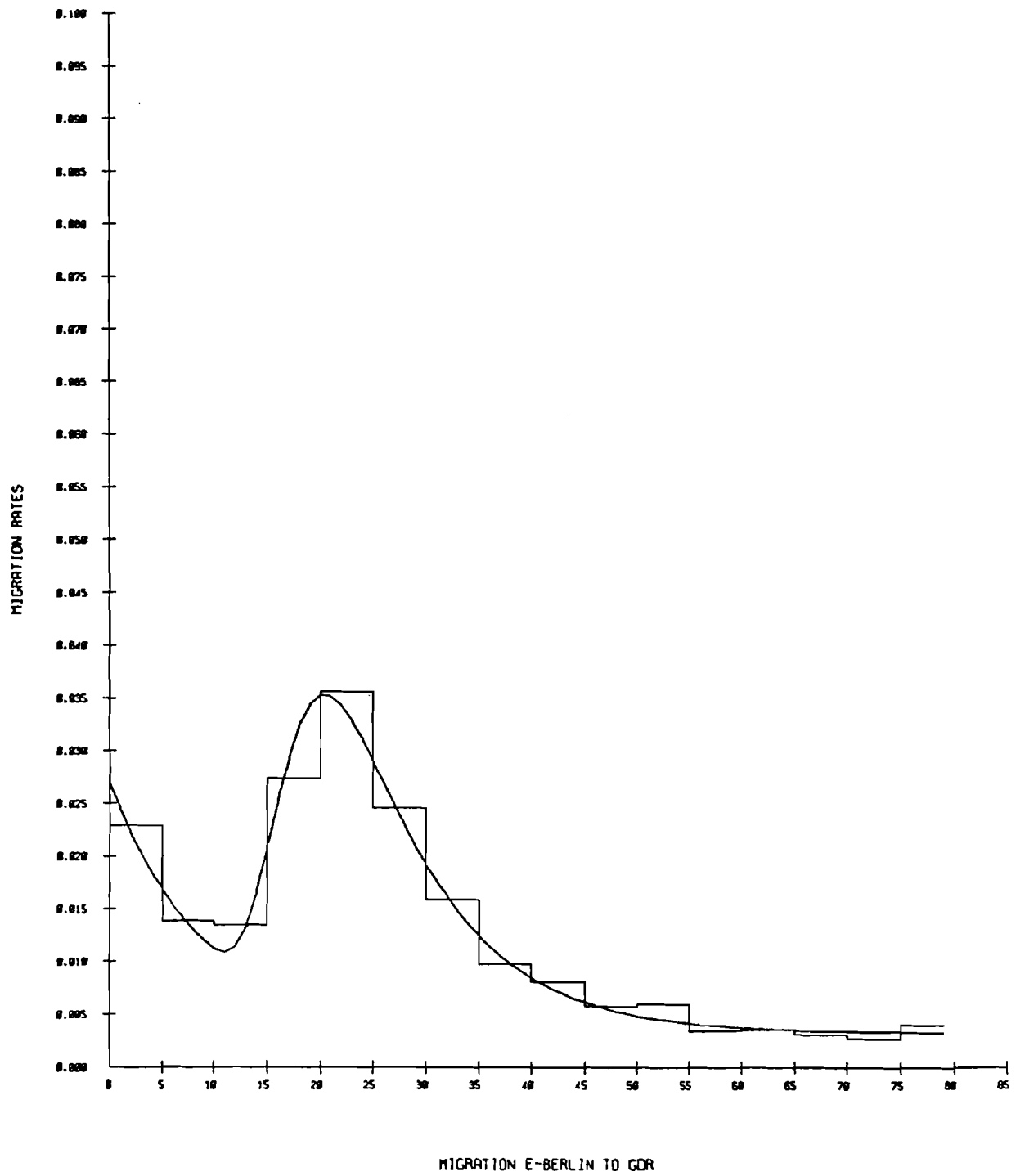
APPENDIX C: MIGRATION SCHEDULES





MIGRATION W-BERLIN TO FRG





APPENDIX D: EXPECTATION OF LIFE BY AGE  
AND PLACE OF BIRTH: 1974

expectations of life by place of birth  
\*\*\*\*\*

age initial region of cohort frg  
\*\*\*

|    | total    | frg      | w-berlin |
|----|----------|----------|----------|
| 0  | 72.20033 | 71.19597 | 1.00441  |
| 5  | 68.75734 | 67.73632 | 1.02102  |
| 10 | 63.90024 | 62.89150 | 1.00874  |
| 15 | 58.99045 | 57.99393 | 0.99152  |
| 20 | 54.25236 | 53.28305 | 0.96341  |
| 25 | 49.51699 | 48.60238 | 0.91461  |
| 30 | 44.74632 | 43.91632 | 0.82949  |
| 35 | 40.02296 | 39.23662 | 0.73635  |
| 40 | 35.36579 | 34.72330 | 0.64240  |
| 45 | 30.79621 | 30.24537 | 0.55033  |
| 50 | 26.47523 | 26.01093 | 0.46426  |
| 55 | 22.30899 | 21.92549 | 0.33350  |
| 60 | 18.36355 | 18.05393 | 0.30953  |
| 65 | 14.72863 | 14.43459 | 0.24404  |
| 70 | 11.60943 | 11.41931 | 0.13962  |
| 75 | 9.07361  | 3.92739  | 0.14622  |

age initial region of cohort w-berlin  
\*\*\*

|    | total    | frg      | w-berlin |
|----|----------|----------|----------|
| 0  | 71.85935 | 42.02552 | 29.84432 |
| 5  | 63.41904 | 42.59463 | 25.32526 |
| 10 | 63.54442 | 41.71432 | 21.83010 |
| 15 | 53.64775 | 40.47717 | 13.17058 |
| 20 | 53.36224 | 39.00935 | 14.85239 |
| 25 | 49.13490 | 37.01642 | 12.11843 |
| 30 | 44.39416 | 34.34553 | 10.04853 |
| 35 | 39.70395 | 31.28270 | 8.42125  |
| 40 | 35.08401 | 23.04214 | 7.04183  |
| 45 | 30.56120 | 24.73456 | 5.82664  |
| 50 | 26.29373 | 21.52426 | 4.76947  |
| 55 | 22.15633 | 19.33525 | 3.32158  |
| 60 | 18.25144 | 15.26037 | 2.99058  |
| 65 | 14.64050 | 12.36276 | 2.27773  |
| 70 | 11.54471 | 9.64134  | 1.70337  |
| 75 | 9.01436  | 7.75052  | 1.25434  |

# expectations of life by place of birth

age initial region of cohort jdr \*\*\*

|    | total    | jdr      | e-berlin |
|----|----------|----------|----------|
| 0  | 71.76533 | 68.97311 | 2.78722  |
| 5  | 68.03011 | 65.21296 | 2.81715  |
| 10 | 63.16707 | 60.39717 | 2.76990  |
| 15 | 58.27295 | 55.56369 | 2.70427  |
| 20 | 53.49353 | 50.87329 | 2.61524  |
| 25 | 48.75350 | 46.27836 | 2.48014  |
| 30 | 43.96696 | 41.67694 | 2.29912  |
| 35 | 39.23519 | 37.17222 | 2.06297  |
| 40 | 34.54534 | 32.72231 | 1.82303  |
| 45 | 29.99341 | 28.41523 | 1.58314  |
| 50 | 25.56369 | 24.21360 | 1.34509  |
| 55 | 21.33590 | 20.21933 | 1.11602  |
| 60 | 17.26260 | 16.36747 | 0.89513  |
| 65 | 13.64343 | 12.94491 | 0.69856  |
| 70 | 10.43189 | 9.90745  | 0.52444  |
| 75 | 7.82067  | 7.43655  | 0.38212  |

age initial region of cohort e-berlin \*\*\*

|    | total    | jdr      | e-berlin |
|----|----------|----------|----------|
| 0  | 71.27330 | 22.27730 | 49.00150 |
| 5  | 67.50372 | 22.50215 | 45.00157 |
| 10 | 62.62335 | 22.10391 | 40.52444 |
| 15 | 57.72710 | 21.51063 | 36.21642 |
| 20 | 52.93079 | 20.69313 | 32.23260 |
| 25 | 48.17655 | 19.53661 | 28.63994 |
| 30 | 43.38673 | 18.04477 | 25.34201 |
| 35 | 38.64537 | 16.33165 | 22.26372 |
| 40 | 33.94584 | 14.62930 | 19.32504 |
| 45 | 29.33603 | 12.84600 | 16.54303 |
| 50 | 24.97719 | 11.07235 | 13.90484 |
| 55 | 20.77337 | 9.34539  | 11.43443 |
| 60 | 16.73556 | 7.66672  | 9.11834  |
| 65 | 13.23723 | 6.15746  | 7.07932  |
| 70 | 10.09931 | 4.80599  | 5.29332  |
| 75 | 7.52447  | 3.60677  | 3.82770  |



APPENDIX E: AGE-SPECIFIC MULTIREGIONAL POPULATION  
PROJECTIONS: FRG AND WEST BERLIN, 1974-2024;  
GDR AND EAST BERLIN, 1975-2025

multiregional population projection  
\*\*\*\*\*

| year 1974<br>-----               |           |           |          | year 1975<br>-----               |           |           |          |
|----------------------------------|-----------|-----------|----------|----------------------------------|-----------|-----------|----------|
| population<br>-----              |           |           |          | population<br>-----              |           |           |          |
| age                              | total     | frg       | w-berlin | age                              | total     | gdr       | e-berlin |
| 0                                | 3493458.  | 3400920.  | 92538.   | 0                                | 916404.   | 853751.   | 62653.   |
| 5                                | 4936305.  | 4818346.  | 117959.  | 5                                | 1155641.  | 1076632.  | 79009.   |
| 10                               | 5054872.  | 4941930.  | 112942.  | 10                               | 1358330.  | 1266071.  | 92259.   |
| 15                               | 4458872.  | 4363852.  | 95020.   | 15                               | 1270738.  | 1197582.  | 73156.   |
| 20                               | 4275050.  | 4137431.  | 137619.  | 20                               | 1261976.  | 1189325.  | 72651.   |
| 25                               | 3928871.  | 3787265.  | 141606.  | 25                               | 925851.   | 859163.   | 66688.   |
| 30                               | 4641743.  | 4463845.  | 177893.  | 30                               | 1050480.  | 960265.   | 90215.   |
| 35                               | 4905239.  | 4751972.  | 153267.  | 35                               | 1269908.  | 1169712.  | 100196.  |
| 40                               | 3880997.  | 3775017.  | 105980.  | 40                               | 1019703.  | 942968.   | 76735.   |
| 45                               | 3865118.  | 3760743.  | 104375.  | 45                               | 950670.   | 887736.   | 62934.   |
| 50                               | 3738355.  | 3630684.  | 107671.  | 50                               | 844446.   | 795918.   | 48528.   |
| 55                               | 2391856.  | 2304303.  | 87543.   | 55                               | 600172.   | 561177.   | 38995.   |
| 60                               | 3565237.  | 3416893.  | 148344.  | 60                               | 864971.   | 808111.   | 56860.   |
| 65                               | 3318357.  | 3162652.  | 155705.  | 65                               | 933811.   | 869064.   | 64747.   |
| 70                               | 2611503.  | 2485134.  | 126369.  | 70                               | 788767.   | 736518.   | 52249.   |
| 75                               | 2937160.  | 2767635.  | 169525.  | 75                               | 919493.   | 859199.   | 60299.   |
| total                            | 62003000. | 59968632. | 2034366. | total                            | 16131366. | 15033192. | 1098174. |
| percentage distribution<br>----- |           |           |          | percentage distribution<br>----- |           |           |          |
| age                              | total     | frg       | w-berlin | age                              | total     | gdr       | e-berlin |
| 0                                | 5.6343    | 5.6712    | 4.5487   | 0                                | 5.6809    | 5.6791    | 5.7052   |
| 5                                | 7.9614    | 8.0349    | 5.7983   | 5                                | 7.1639    | 7.1617    | 7.1946   |
| 10                               | 8.1526    | 8.2409    | 5.5517   | 10                               | 8.4204    | 8.4218    | 8.4011   |
| 15                               | 7.1914    | 7.2769    | 4.6707   | 15                               | 7.8774    | 7.9653    | 6.6616   |
| 20                               | 6.8949    | 6.8993    | 6.7647   | 20                               | 7.8231    | 7.9113    | 6.6156   |
| 25                               | 6.3366    | 6.3154    | 5.9607   | 25                               | 5.7394    | 5.7151    | 6.0726   |
| 30                               | 7.4863    | 7.4436    | 8.7446   | 30                               | 6.5120    | 6.3876    | 8.2150   |
| 35                               | 7.9113    | 7.9241    | 7.5339   | 35                               | 7.8723    | 7.7809    | 9.1239   |
| 40                               | 6.2594    | 6.2950    | 5.2095   | 40                               | 6.3212    | 6.2726    | 6.9875   |
| 45                               | 6.2338    | 6.2712    | 5.1306   | 45                               | 5.8933    | 5.9052    | 5.7303   |
| 50                               | 6.0293    | 6.0543    | 5.2926   | 50                               | 5.2348    | 5.2944    | 4.4190   |
| 55                               | 3.8576    | 3.8425    | 4.3035   | 55                               | 3.7205    | 3.7329    | 3.5509   |
| 60                               | 5.7501    | 5.6978    | 7.2919   | 60                               | 5.3620    | 5.3755    | 5.1777   |
| 65                               | 5.3519    | 5.2738    | 7.6537   | 65                               | 5.7888    | 5.7810    | 5.8959   |
| 70                               | 4.2119    | 4.1441    | 6.2117   | 70                               | 4.8896    | 4.8993    | 4.7578   |
| 75                               | 4.7371    | 4.6151    | 8.3331   | 75                               | 5.7001    | 5.7153    | 5.4903   |
| total                            | 100.0000  | 100.0000  | 100.0000 | total                            | 100.0000  | 100.0000  | 100.0000 |
| m.ag                             | 36.6453   | 36.4720   | 41.7529  | m.ag                             | 37.1122   | 37.1115   | 37.1221  |
| sha                              | 100.0000  | 96.7189   | 3.2811   | sha                              | 100.0000  | 93.1923   | 6.8077   |

year 1979

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population

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| age   | total     | frg       | w-berlin |
|-------|-----------|-----------|----------|
| 0     | 3135482.  | 3052145.  | 83336.   |
| 5     | 3451165.  | 3365115.  | 86051.   |
| 10    | 4927374.  | 4814493.  | 112881.  |
| 15    | 5039543.  | 4926092.  | 113451.  |
| 20    | 4437276.  | 4327893.  | 109389.  |
| 25    | 4253731.  | 4113003.  | 140727.  |
| 30    | 3906432.  | 3774186.  | 132245.  |
| 35    | 4505393.  | 4440114.  | 165278.  |
| 40    | 4851113.  | 4705777.  | 145336.  |
| 45    | 3810364.  | 3710351.  | 100014.  |
| 50    | 3754892.  | 3657962.  | 96930.   |
| 55    | 3581276.  | 3483432.  | 97845.   |
| 60    | 2237070.  | 2160219.  | 76851.   |
| 65    | 3189335.  | 3064845.  | 124490.  |
| 70    | 2752140.  | 2630302.  | 121838.  |
| 75    | 4167543.  | 3988311.  | 179232.  |
| total | 62100132. | 60214236. | 1885895. |

year 1980

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population

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| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 909119.   | 847339.   | 61780.   |
| 5     | 907185.   | 842953.   | 64232.   |
| 10    | 1153439.  | 1073612.  | 79928.   |
| 15    | 1354488.  | 1259512.  | 94976.   |
| 20    | 1264970.  | 1184761.  | 80209.   |
| 25    | 1255900.  | 1173913.  | 82087.   |
| 30    | 920301.   | 849495.   | 71317.   |
| 35    | 1042702.  | 951561.   | 91141.   |
| 40    | 1255764.  | 1155859.  | 99905.   |
| 45    | 1002330.  | 926640.   | 75690.   |
| 50    | 925717.   | 864372.   | 61345.   |
| 55    | 811049.   | 764573.   | 46476.   |
| 60    | 560634.   | 524504.   | 36130.   |
| 65    | 769022.   | 719149.   | 49973.   |
| 70    | 764109.   | 712122.   | 51987.   |
| 75    | 1070987.  | 1005123.  | 65764.   |
| total | 15968116. | 14855378. | 1112738. |

percentage distribution

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| age   | total    | frg      | w-berlin  |
|-------|----------|----------|-----------|
| 0     | 5.0491   | 5.0688   | 4.4189    |
| 5     | 5.5574   | 5.5886   | 4.5629    |
| 10    | 7.9346   | 7.9956   | 5.9856    |
| 15    | 8.1152   | 8.1809   | 5.0158    |
| 20    | 7.1454   | 7.1875   | 5.8004    |
| 25    | 6.8493   | 6.8306   | 7.4521    |
| 30    | 6.2905   | 6.2679   | 7.0123    |
| 35    | 7.4161   | 7.3739   | 8.7639    |
| 40    | 7.8118   | 7.8151   | 7.7065    |
| 45    | 6.1358   | 6.1619   | 5.3032    |
| 50    | 6.0465   | 6.0749   | 5.1398    |
| 55    | 5.7669   | 5.7851   | 5.1832    |
| 60    | 3.6024   | 3.5876   | 4.0750    |
| 65    | 5.1358   | 5.0899   | 6.6011    |
| 70    | 4.4318   | 4.3682   | 6.4605    |
| 75    | 6.7110   | 6.6235   | 9.5033    |
| total | 100.0000 | 100.0000 | 100.0000  |
| m.ag  | 38.1290  | 38.0170  | 41.7041   |
| sha   | 100.0000 | 96.9631  | 3.0369    |
| lam   | 1.001567 | 1.004095 | 0.927018  |
| r     | 0.000313 | 0.000817 | -0.015156 |

percentage distribution

-----

| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 5.6933    | 5.7039    | 5.5521   |
| 5     | 5.6812    | 5.6744    | 5.7724   |
| 10    | 7.2234    | 7.2271    | 7.1740   |
| 15    | 8.4825    | 8.4785    | 8.5353   |
| 20    | 7.9218    | 7.9753    | 7.2032   |
| 25    | 7.8650    | 7.9016    | 7.3770   |
| 30    | 5.7665    | 5.7184    | 6.4091   |
| 35    | 6.5299    | 6.4055    | 8.1907   |
| 40    | 7.8642    | 7.7807    | 8.9733   |
| 45    | 6.2771    | 6.2377    | 6.8021   |
| 50    | 5.7973    | 5.8186    | 5.5130   |
| 55    | 5.0792    | 5.1463    | 4.1767   |
| 60    | 3.5110    | 3.5307    | 3.2470   |
| 65    | 4.8160    | 4.8410    | 4.4820   |
| 70    | 4.7352    | 4.7937    | 4.6720   |
| 75    | 6.7064    | 6.7561    | 5.9101   |
| total | 100.0000  | 100.0000  | 100.0000 |
| m.ag  | 37.6238   | 37.6606   | 37.1321  |
| sha   | 100.0000  | 93.0315   | 6.9685   |
| lam   | 0.989880  | 0.989172  | 1.013262 |
| r     | -0.002034 | -0.002380 | 0.002635 |

year 1984

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population

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| age   | total     | frg       | w-berlin |
|-------|-----------|-----------|----------|
| 0     | 3247521.  | 3168473.  | 79042.   |
| 5     | 3097522.  | 3020048.  | 77474.   |
| 10    | 3444921.  | 3362739.  | 82183.   |
| 15    | 4912433.  | 4799305.  | 113127.  |
| 20    | 5015138.  | 4886565.  | 128573.  |
| 25    | 4415174.  | 4293842.  | 121332.  |
| 30    | 4229459.  | 4096061.  | 133399.  |
| 35    | 3875832.  | 3751519.  | 124373.  |
| 40    | 4554474.  | 4399223.  | 155251.  |
| 45    | 4762731.  | 4626292.  | 136439.  |
| 50    | 3701723.  | 3608732.  | 92991.   |
| 55    | 3597218.  | 3508791.  | 88428.   |
| 60    | 3349876.  | 3263255.  | 85521.   |
| 65    | 2001396.  | 1935598.  | 64797.   |
| 70    | 2645443.  | 2547626.  | 97816.   |
| 75    | 4392933.  | 4219377.  | 173556.  |
| total | 61243856. | 59488452. | 1755403. |

percentage distribution

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| age   | total     | frg       | w-berlin  |
|-------|-----------|-----------|-----------|
| 0     | 5.3026    | 5.3262    | 4.5023    |
| 5     | 5.0577    | 5.0767    | 4.4135    |
| 10    | 5.6249    | 5.6528    | 4.6817    |
| 15    | 8.0211    | 8.0676    | 6.4445    |
| 20    | 8.1888    | 8.2143    | 7.3244    |
| 25    | 7.2092    | 7.2179    | 6.9119    |
| 30    | 6.9059    | 6.8355    | 7.5993    |
| 35    | 6.3286    | 6.3063    | 7.0851    |
| 40    | 7.4366    | 7.3951    | 8.8442    |
| 45    | 7.7767    | 7.7768    | 7.7725    |
| 50    | 6.0442    | 6.0663    | 5.2974    |
| 55    | 5.8736    | 5.8933    | 5.0375    |
| 60    | 5.4697    | 5.4855    | 4.9346    |
| 65    | 3.2679    | 3.2554    | 3.6913    |
| 70    | 4.3195    | 4.2826    | 5.5723    |
| 75    | 7.1729    | 7.0928    | 9.8870    |
| total | 100.0000  | 100.0000  | 100.0000  |
| m.ag  | 38.7814   | 38.7039   | 41.2385   |
| sha   | 100.0000  | 97.1338   | 2.8563    |
| lam   | 0.986211  | 0.937947  | 0.930806  |
| r     | -0.002777 | -0.002425 | -0.014341 |

year 1985

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population

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| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 977349.   | 910344.   | 67005.   |
| 5     | 899973.   | 836600.   | 63373.   |
| 10    | 905456.   | 340687.   | 64770.   |
| 15    | 1150177.  | 1068146.  | 82031.   |
| 20    | 1348346.  | 1247688.  | 100657.  |
| 25    | 1258830.  | 1170009.  | 88871.   |
| 30    | 1249049.  | 1160038.  | 89011.   |
| 35    | 913982.   | 841453.   | 72529.   |
| 40    | 1031091.  | 940554.   | 90537.   |
| 45    | 1234362.  | 1135957.  | 98395.   |
| 50    | 975991.   | 902428.   | 73563.   |
| 55    | 889050.   | 830452.   | 58597.   |
| 60    | 757689.   | 714541.   | 43143.   |
| 65    | 498456.   | 466756.   | 31700.   |
| 70    | 629334.   | 589253.   | 40081.   |
| 75    | 1037238.  | 971875.   | 65363.   |
| total | 15756422. | 14626791. | 1129631. |

percentage distribution

-----

| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 6.2029    | 6.2238    | 5.9315   |
| 5     | 5.7118    | 5.7196    | 5.6101   |
| 10    | 5.7466    | 5.7476    | 5.7337   |
| 15    | 7.2997    | 7.3027    | 7.2617   |
| 20    | 8.5574    | 3.5302    | 8.9106   |
| 25    | 7.9896    | 7.9991    | 7.8672   |
| 30    | 7.9272    | 7.9309    | 7.8797   |
| 35    | 5.8007    | 5.7523    | 6.4206   |
| 40    | 6.5439    | 6.4303    | 8.0147   |
| 45    | 7.8340    | 7.7663    | 8.7104   |
| 50    | 6.1942    | 6.1697    | 6.5121   |
| 55    | 5.6425    | 5.6776    | 5.1373   |
| 60    | 4.8088    | 4.8852    | 3.8195   |
| 65    | 3.1635    | 3.1911    | 2.8062   |
| 70    | 3.9941    | 4.0286    | 3.5481   |
| 75    | 6.5830    | 6.6445    | 5.7862   |
| total | 100.0000  | 100.0000  | 100.0000 |
| m.ag  | 37.5905   | 37.6379   | 36.9770  |
| sha   | 100.0000  | 92.8307   | 7.1693   |
| lam   | 0.986743  | 0.934613  | 1.015181 |
| r     | -0.002669 | -0.003101 | 0.003013 |

year 1989

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population

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| age   | total     | frg       | w-berlin |
|-------|-----------|-----------|----------|
| 0     | 3341962.  | 3263874.  | 78088.   |
| 5     | 3208204.  | 3134211.  | 73993.   |
| 10    | 3091918.  | 3017937.  | 73981.   |
| 15    | 3434477.  | 3352415.  | 82061.   |
| 20    | 4888644.  | 4761245.  | 127399.  |
| 25    | 4990153.  | 4849358.  | 140785.  |
| 30    | 4390027.  | 4270787.  | 119240.  |
| 35    | 4196423.  | 4070009.  | 126414.  |
| 40    | 3833108.  | 3715396.  | 117711.  |
| 45    | 4471360.  | 4326566.  | 144794.  |
| 50    | 4626846.  | 4500441.  | 126405.  |
| 55    | 3546304.  | 3461382.  | 84922.   |
| 60    | 3364895.  | 3286319.  | 78575.   |
| 65    | 2997306.  | 2923625.  | 73681.   |
| 70    | 1660252.  | 1609082.  | 51170.   |
| 75    | 4224252.  | 4083518.  | 140734.  |
| total | 60266128. | 58626172. | 1639956. |

year 1990

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population

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| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 993511.   | 919630.   | 73881.   |
| 5     | 967516.   | 893841.   | 68675.   |
| 10    | 898258.   | 834335.   | 63923.   |
| 15    | 902896.   | 836544.   | 66352.   |
| 20    | 1144962.  | 1053256.  | 86706.   |
| 25    | 1341857.  | 1233501.  | 108255.  |
| 30    | 1252014.  | 1156710.  | 95304.   |
| 35    | 1239797.  | 1148742.  | 91055.   |
| 40    | 903802.   | 831499.   | 72302.   |
| 45    | 1013509.  | 924562.   | 88947.   |
| 50    | 1201910.  | 1106384.  | 95526.   |
| 55    | 937271.   | 867148.   | 70123.   |
| 60    | 830472.   | 776191.   | 54281.   |
| 65    | 673745.   | 635816.   | 37929.   |
| 70    | 407926.   | 382444.   | 25483.   |
| 75    | 854630.   | 804099.   | 50532.   |
| total | 15564078. | 14414803. | 1149275. |

percentage distribution

-----

| age   | total     | frg       | w-berlin  |
|-------|-----------|-----------|-----------|
| 0     | 5.5453    | 5.5673    | 4.7616    |
| 5     | 5.3234    | 5.3461    | 4.5119    |
| 10    | 5.1304    | 5.1478    | 4.5112    |
| 15    | 5.6939    | 5.7183    | 5.0039    |
| 20    | 8.1118    | 8.1214    | 7.7634    |
| 25    | 8.2802    | 8.2717    | 8.5847    |
| 30    | 7.2844    | 7.2348    | 7.2709    |
| 35    | 6.9632    | 6.9423    | 7.7084    |
| 40    | 6.3603    | 6.3374    | 7.1777    |
| 45    | 7.4194    | 7.3799    | 8.3291    |
| 50    | 7.6774    | 7.6765    | 7.7073    |
| 55    | 5.8844    | 5.9042    | 5.1783    |
| 60    | 5.5834    | 5.6055    | 4.7913    |
| 65    | 4.9735    | 4.9869    | 4.4929    |
| 70    | 2.7549    | 2.7446    | 3.1202    |
| 75    | 7.0093    | 6.9653    | 8.5316    |
| total | 100.0000  | 100.0000  | 100.0000  |
| m.ag  | 39.1750   | 39.1388   | 40.4631   |
| sha   | 100.0000  | 97.2788   | 2.7212    |
| lam   | 0.984035  | 0.985505  | 0.934233  |
| r     | -0.003219 | -0.002920 | -0.013606 |

percentage distribution

-----

| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 6.3834    | 6.3798    | 6.4285   |
| 5     | 6.2163    | 6.2355    | 5.9755   |
| 10    | 5.7714    | 5.7830    | 5.5521   |
| 15    | 5.8012    | 5.8034    | 5.7734   |
| 20    | 7.3564    | 7.3414    | 7.5444   |
| 25    | 8.6215    | 8.5579    | 9.4195   |
| 30    | 8.0443    | 8.0245    | 8.2925   |
| 35    | 7.9653    | 7.9692    | 7.9223   |
| 40    | 5.8070    | 5.7684    | 6.2911   |
| 45    | 6.5118    | 6.4140    | 7.7394   |
| 50    | 7.7223    | 7.6753    | 8.3113   |
| 55    | 6.0220    | 6.0157    | 6.1015   |
| 60    | 5.3358    | 5.3847    | 4.7231   |
| 65    | 4.3288    | 4.4109    | 3.3003   |
| 70    | 2.6209    | 2.6531    | 2.2173   |
| 75    | 5.4910    | 5.5783    | 4.3958   |
| total | 100.0000  | 100.0000  | 100.0000 |
| m.ag  | 37.4807   | 37.5441   | 36.6852  |
| sha   | 100.0000  | 92.6159   | 7.3341   |
| lam   | 0.987793  | 0.935507  | 1.017390 |
| r     | -0.002456 | -0.002920 | 0.003448 |

year 1994

| population |           |           |          |
|------------|-----------|-----------|----------|
| age        | total     | frg       | w-berlin |
| 0          | 3198817.  | 3124573.  | 74244.   |
| 5          | 3301502.  | 3228152.  | 73350.   |
| 10         | 3202399.  | 3131469.  | 70931.   |
| 15         | 3082543.  | 3008691.  | 73852.   |
| 20         | 3417846.  | 3326356.  | 91491.   |
| 25         | 4854287.  | 4725524.  | 138763.  |
| 30         | 4961725.  | 4824118.  | 137605.  |
| 35         | 4355793.  | 4240779.  | 115014.  |
| 40         | 4150139.  | 4029943.  | 120197.  |
| 45         | 3763252.  | 3652892.  | 110360.  |
| 50         | 4343659.  | 4210120.  | 133539.  |
| 55         | 4432495.  | 4317416.  | 115079.  |
| 60         | 3317293.  | 3241759.  | 75534.   |
| 65         | 3010844.  | 2943752.  | 67091.   |
| 70         | 2486694.  | 2427965.  | 58729.   |
| 75         | 2651958.  | 2577451.  | 74507.   |
| total      | 58541248. | 57010960. | 1530287. |

percentage distribution

| age   | total     | frg       | w-berlin  |
|-------|-----------|-----------|-----------|
| 0     | 5.4642    | 5.4907    | 4.8516    |
| 5     | 5.6396    | 5.6623    | 4.7932    |
| 10    | 5.4703    | 5.4927    | 4.6351    |
| 15    | 5.2656    | 5.2774    | 4.8261    |
| 20    | 5.8384    | 5.8346    | 5.9787    |
| 25    | 8.3092    | 8.2888    | 9.0678    |
| 30    | 8.4756    | 8.4617    | 8.9922    |
| 35    | 7.4406    | 7.4385    | 7.5158    |
| 40    | 7.0893    | 7.0687    | 7.8545    |
| 45    | 6.4284    | 6.4074    | 7.2117    |
| 50    | 7.4198    | 7.3848    | 8.7264    |
| 55    | 7.5716    | 7.5730    | 7.5201    |
| 60    | 5.6666    | 5.6862    | 4.9359    |
| 65    | 5.1431    | 5.1635    | 4.3842    |
| 70    | 4.2478    | 4.2588    | 3.8373    |
| 75    | 4.5301    | 4.5210    | 4.8689    |
| total | 100.0000  | 100.0000  | 100.0000  |
| m.ag  | 39.2274   | 39.2133   | 39.7537   |
| sha   | 100.0000  | 97.3860   | 2.6140    |
| lam   | 0.971379  | 0.972449  | 0.933127  |
| r     | -0.005808 | -0.005588 | -0.013843 |

year 1995

| population |           |           |          |
|------------|-----------|-----------|----------|
| age        | total     | gdr       | e-berlin |
| 0          | 939040.   | 863395.   | 75646.   |
| 5          | 983518.   | 908355.   | 75163.   |
| 10         | 965673.   | 895432.   | 69241.   |
| 15         | 895718.   | 830202.   | 65516.   |
| 20         | 898803.   | 828992.   | 69811.   |
| 25         | 1139452.  | 1045427.  | 93025.   |
| 30         | 1334538.  | 1220469.  | 114069.  |
| 35         | 1242740.  | 1145702.  | 97038.   |
| 40         | 1225986.  | 1134938.  | 91049.   |
| 45         | 888398.   | 817199.   | 71199.   |
| 50         | 986837.   | 900640.   | 85197.   |
| 55         | 1154194.  | 1063205.  | 90989.   |
| 60         | 875421.   | 810577.   | 64844.   |
| 65         | 738355.   | 690740.   | 47615.   |
| 70         | 551474.   | 520927.   | 30548.   |
| 75         | 554023.   | 521869.   | 32154.   |
| total      | 15374172. | 14200069. | 1174103. |

percentage distribution

| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 6.1079    | 6.0802    | 6.4428   |
| 5     | 6.3972    | 6.3968    | 6.4017   |
| 10    | 6.2811    | 6.3129    | 5.8973   |
| 15    | 5.8261    | 5.8465    | 5.5801   |
| 20    | 5.8462    | 5.8379    | 5.9459   |
| 25    | 7.4115    | 7.3692    | 7.9231   |
| 30    | 8.6804    | 8.5948    | 9.7154   |
| 35    | 8.0833    | 8.0683    | 8.2648   |
| 40    | 7.9743    | 7.9925    | 7.7548   |
| 45    | 5.7785    | 5.7549    | 5.0642   |
| 50    | 6.4188    | 6.3425    | 7.3415   |
| 55    | 7.5074    | 7.4873    | 7.7496   |
| 60    | 5.6941    | 5.7083    | 5.5228   |
| 65    | 4.8026    | 4.8643    | 4.0554   |
| 70    | 3.5870    | 3.6685    | 2.6013   |
| 75    | 3.6036    | 3.6751    | 2.7386   |
| total | 100.0000  | 100.0000  | 100.0000 |
| m.ag  | 37.6575   | 37.7273   | 36.3129  |
| sha   | 100.0000  | 92.3632   | 7.6369   |
| lam   | 0.987793  | 0.935103  | 1.021604 |
| r     | -0.002455 | -0.003002 | 0.004275 |

year 1999

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population

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| age   | total     | frg       | w-berlin |
|-------|-----------|-----------|----------|
| 0     | 2845723.  | 2779510.  | 66213.   |
| 5     | 3160090.  | 3090311.  | 69779.   |
| 10    | 3295529.  | 3225032.  | 70447.   |
| 15    | 3192688.  | 3121379.  | 71309.   |
| 20    | 3067618.  | 2985339.  | 82279.   |
| 25    | 3400316.  | 3302011.  | 98805.   |
| 30    | 4836573.  | 4701249.  | 135324.  |
| 35    | 4923024.  | 4790641.  | 132383.  |
| 40    | 4307829.  | 4197312.  | 110516.  |
| 45    | 4074559.  | 3961510.  | 113048.  |
| 50    | 3655854.  | 3553713.  | 102151.  |
| 55    | 4161071.  | 4039978.  | 121093.  |
| 60    | 4146159.  | 4044103.  | 102057.  |
| 65    | 2968274.  | 2903715.  | 64559.   |
| 70    | 2498011.  | 2444323.  | 53688.   |
| 75    | 3973563.  | 3896188.  | 87375.   |
| total | 58507392. | 57026364. | 1481027. |

percentage distribution

-----

| age   | total     | frg      | w-berlin  |
|-------|-----------|----------|-----------|
| 0     | 4.8639    | 4.8741   | 4.4708    |
| 5     | 5.4012    | 5.4191   | 4.7115    |
| 10    | 5.6327    | 5.6554   | 4.7566    |
| 15    | 5.4569    | 5.4736   | 4.8148    |
| 20    | 5.2431    | 5.2350   | 5.5555    |
| 25    | 5.8126    | 5.7903   | 6.6714    |
| 30    | 8.2666    | 8.2440   | 9.1372    |
| 35    | 8.4144    | 8.4007   | 8.9386    |
| 40    | 7.3629    | 7.3603   | 7.4621    |
| 45    | 6.9642    | 6.9468   | 7.6331    |
| 50    | 6.2485    | 6.2317   | 6.8973    |
| 55    | 7.1120    | 7.0844   | 8.1763    |
| 60    | 7.0866    | 7.0916   | 6.8910    |
| 65    | 5.0733    | 5.0919   | 4.3591    |
| 70    | 4.2696    | 4.2863   | 3.6251    |
| 75    | 6.7916    | 6.8147   | 5.8996    |
| total | 100.0000  | 100.0000 | 100.0000  |
| m.ag  | 40.8256   | 40.8242  | 40.8777   |
| sha   | 100.0000  | 97.4637  | 2.5314    |
| lam   | 0.999422  | 1.000270 | 0.967810  |
| r     | -0.000116 | 0.000054 | -0.006544 |

year 2000

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population

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| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 834810.   | 765586.   | 69224.   |
| 5     | 929597.   | 853159.   | 76438.   |
| 10    | 981645.   | 906160.   | 75485.   |
| 15    | 962943.   | 892026.   | 70917.   |
| 20    | 891657.   | 822677.   | 68981.   |
| 25    | 894473.   | 819395.   | 74583.   |
| 30    | 1133237.  | 1035360.  | 97877.   |
| 35    | 1324657.  | 1209384.  | 115273.  |
| 40    | 1228399.  | 1132104.  | 96795.   |
| 45    | 1205100.  | 1115253.  | 89842.   |
| 50    | 865041.   | 795925.   | 69116.   |
| 55    | 947606.   | 865608.   | 81997.   |
| 60    | 1077976.  | 993894.   | 84082.   |
| 65    | 778199.   | 721415.   | 56785.   |
| 70    | 604242.   | 565973.   | 38269.   |
| 75    | 749470.   | 710711.   | 38759.   |
| total | 15409557. | 14205133. | 1204424. |

percentage distribution

-----

| age   | total    | gdr      | e-berlin |
|-------|----------|----------|----------|
| 0     | 5.4175   | 5.3895   | 5.7475   |
| 5     | 6.0326   | 6.0060   | 6.3464   |
| 10    | 6.3704   | 6.3791   | 6.2673   |
| 15    | 6.2490   | 6.2796   | 5.8880   |
| 20    | 5.7864   | 5.7914   | 5.7273   |
| 25    | 5.8047   | 5.7718   | 6.1924   |
| 30    | 7.3541   | 7.2886   | 3.1265   |
| 35    | 8.5963   | 8.5137   | 9.5708   |
| 40    | 7.9749   | 7.9597   | 8.0366   |
| 45    | 7.8205   | 7.8511   | 7.4593   |
| 50    | 5.6137   | 5.6031   | 5.7335   |
| 55    | 6.1495   | 6.0936   | 6.8080   |
| 60    | 6.9955   | 6.9957   | 6.9311   |
| 65    | 5.0501   | 5.0786   | 4.7147   |
| 70    | 3.9212   | 3.9843   | 3.1774   |
| 75    | 4.8637   | 5.0032   | 3.2181   |
| total | 100.0000 | 100.0000 | 100.0000 |
| m.ag  | 38.9701  | 39.0622  | 37.8345  |
| sha   | 100.0000 | 92.1839  | 7.8161   |
| lam   | 1.002302 | 1.000357 | 1.025324 |
| r     | 0.000460 | 0.000071 | 0.005099 |

| year 2004  |           |           |          |
|------------|-----------|-----------|----------|
| -----      |           |           |          |
| population |           |           |          |
| -----      |           |           |          |
| age        | total     | frg       | w-berlin |
| 0          | 2537475.  | 2478884.  | 59591.   |
| 5          | 2811271.  | 2749053.  | 62218.   |
| 10         | 3154372.  | 3087334.  | 67038.   |
| 15         | 3285533.  | 3214468.  | 71065.   |
| 20         | 3177226.  | 3096233.  | 80993.   |
| 25         | 3052332.  | 2963531.  | 88801.   |
| 30         | 3381437.  | 3285435.  | 96002.   |
| 35         | 4798845.  | 4668800.  | 130046.  |
| 40         | 4868802.  | 4741791.  | 127011.  |
| 45         | 4229479.  | 4124789.  | 104690.  |
| 50         | 3958337.  | 3853463.  | 104869.  |
| 55         | 3502279.  | 3409354.  | 92925.   |
| 60         | 3892128.  | 3735143.  | 106985.  |
| 65         | 3709342.  | 3622876.  | 86966.   |
| 70         | 2452711.  | 2410996.  | 51715.   |
| 75         | 3992095.  | 3911499.  | 80596.   |
| total      | 56814168. | 55403656. | 1410510. |

| year 2005  |           |           |          |
|------------|-----------|-----------|----------|
| -----      |           |           |          |
| population |           |           |          |
| -----      |           |           |          |
| age        | total     | gdr       | e-berlin |
| 0          | 756845.   | 703609.   | 63236.   |
| 5          | 826416.   | 756629.   | 69786.   |
| 10         | 927828.   | 851340.   | 76487.   |
| 15         | 978871.   | 902039.   | 76932.   |
| 20         | 958577.   | 883988.   | 74589.   |
| 25         | 887367.   | 813622.   | 73745.   |
| 30         | 889599.   | 811327.   | 78272.   |
| 35         | 1124847.  | 1025999.  | 98847.   |
| 40         | 1309906.  | 1195379.  | 114527.  |
| 45         | 1207956.  | 1112599.  | 95357.   |
| 50         | 1173436.  | 1086096.  | 87341.   |
| 55         | 830695.   | 764867.   | 65828.   |
| 60         | 884947.   | 809257.   | 75690.   |
| 65         | 958193.   | 884609.   | 73585.   |
| 70         | 636722.   | 591159.   | 45563.   |
| 75         | 820582.   | 772323.   | 48259.   |
| total      | 15182788. | 13964843. | 1217945. |

| percentage distribution |           |           |           |
|-------------------------|-----------|-----------|-----------|
| -----                   |           |           |           |
| age                     | total     | frg       | w-berlin  |
| 0                       | 4.4663    | 4.4742    | 4.1539    |
| 5                       | 4.9482    | 4.9619    | 4.4110    |
| 10                      | 5.5521    | 5.5724    | 4.7527    |
| 15                      | 5.7829    | 5.8019    | 5.0382    |
| 20                      | 5.5923    | 5.5885    | 5.7421    |
| 25                      | 5.3725    | 5.3490    | 6.2957    |
| 30                      | 5.9517    | 5.9300    | 6.8062    |
| 35                      | 8.4466    | 8.4269    | 9.2193    |
| 40                      | 8.5697    | 8.5586    | 9.0046    |
| 45                      | 7.4444    | 7.4450    | 7.4222    |
| 50                      | 6.9672    | 6.9553    | 7.4343    |
| 55                      | 6.1644    | 6.1537    | 6.5880    |
| 60                      | 6.8506    | 6.8319    | 7.5848    |
| 65                      | 6.5298    | 6.5391    | 6.1655    |
| 70                      | 4.3347    | 4.3517    | 3.6664    |
| 75                      | 7.0266    | 7.0600    | 5.7140    |
| total                   | 100.0000  | 100.0000  | 100.0000  |
| m.ag                    | 41.6843   | 41.6855   | 41.6358   |
| sha                     | 100.0000  | 97.5173   | 2.4827    |
| lam                     | 0.971060  | 0.971545  | 0.952386  |
| r                       | -0.005873 | -0.005774 | -0.009757 |

| percentage distribution |           |           |          |
|-------------------------|-----------|-----------|----------|
| -----                   |           |           |          |
| age                     | total     | gdr       | e-berlin |
| 0                       | 5.0508    | 5.0384    | 5.1920   |
| 5                       | 5.4431    | 5.4181    | 5.7299   |
| 10                      | 6.1110    | 6.0963    | 6.2800   |
| 15                      | 6.4472    | 6.4594    | 6.3033   |
| 20                      | 6.3136    | 6.3301    | 6.1242   |
| 25                      | 5.8446    | 5.8262    | 6.0549   |
| 30                      | 5.8593    | 5.8093    | 6.4266   |
| 35                      | 7.4037    | 7.3470    | 8.1159   |
| 40                      | 8.6276    | 8.5599    | 9.4033   |
| 45                      | 7.9561    | 7.9671    | 7.8294   |
| 50                      | 7.7287    | 7.7774    | 7.1712   |
| 55                      | 5.4713    | 5.4771    | 5.4048   |
| 60                      | 5.8286    | 5.7950    | 6.2145   |
| 65                      | 6.3111    | 6.3345    | 6.0417   |
| 70                      | 4.1937    | 4.2332    | 3.7410   |
| 75                      | 5.4047    | 5.5305    | 3.9623   |
| total                   | 100.0000  | 100.0000  | 100.0000 |
| m.ag                    | 39.9183   | 40.0022   | 38.9569  |
| sha                     | 100.0000  | 91.9781   | 8.0219   |
| lam                     | 0.985284  | 0.933084  | 1.011227 |
| r                       | -0.002965 | -0.003412 | 0.002233 |



year 2009

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population

-----

| age   | total     | frg       | w-berlin |
|-------|-----------|-----------|----------|
| 0     | 2383109.  | 2328911.  | 54197.   |
| 5     | 2506754.  | 2451663.  | 55091.   |
| 10    | 2806184.  | 2746418.  | 59767.   |
| 15    | 3144805.  | 3077140.  | 67665.   |
| 20    | 3269621.  | 3188162.  | 81459.   |
| 25    | 3161398.  | 3072548.  | 88850.   |
| 30    | 3034938.  | 2948681.  | 86258.   |
| 35    | 3355056.  | 3262963.  | 92092.   |
| 40    | 4745986.  | 4521298.  | 124688.  |
| 45    | 4780235.  | 4560044.  | 120191.  |
| 50    | 4108937.  | 4011346.  | 97590.   |
| 55    | 3792096.  | 3696518.  | 95578.   |
| 60    | 3276013.  | 3193665.  | 82349.   |
| 65    | 3482412.  | 3391600.  | 90812.   |
| 70    | 3077897.  | 3008450.  | 69447.   |
| 75    | 3935785.  | 3857969.  | 77815.   |
| total | 54861216. | 53517368. | 1343849. |

percentage distribution

-----

| age   | total     | frg       | w-berlin  |
|-------|-----------|-----------|-----------|
| 0     | 4.3439    | 4.3517    | 4.0330    |
| 5     | 4.5693    | 4.5811    | 4.0995    |
| 10    | 5.1151    | 5.1318    | 4.4474    |
| 15    | 5.7323    | 5.7498    | 5.0352    |
| 20    | 5.9598    | 5.9572    | 6.0616    |
| 25    | 5.7625    | 5.7412    | 6.6116    |
| 30    | 5.5320    | 5.5098    | 6.4187    |
| 35    | 6.1155    | 6.0970    | 6.8529    |
| 40    | 8.6509    | 8.6351    | 9.2785    |
| 45    | 8.7133    | 8.7075    | 8.9438    |
| 50    | 7.4897    | 7.4954    | 7.2620    |
| 55    | 6.9122    | 6.9071    | 7.1122    |
| 60    | 5.9715    | 5.9575    | 6.1277    |
| 65    | 6.3477    | 6.3374    | 6.7576    |
| 70    | 5.6103    | 5.6214    | 5.1678    |
| 75    | 7.1741    | 7.2038    | 5.7905    |
| total | 100.0000  | 100.0000  | 100.0000  |
| m.ag  | 42.4770   | 42.4739   | 42.4025   |
| sha   | 100.0000  | 97.5505   | 2.4495    |
| lam   | 0.965526  | 0.965954  | 0.952739  |
| r     | -0.006996 | -0.006928 | -0.009583 |

year 2010

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population

-----

| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 755499.   | 693470.   | 62029.   |
| 5     | 759134.   | 695357.   | 63777.   |
| 10    | 824843.   | 755100.   | 69743.   |
| 15    | 925206.   | 847806.   | 77401.   |
| 20    | 974435.   | 894382.   | 80053.   |
| 25    | 953954.   | 874300.   | 79664.   |
| 30    | 882527.   | 805104.   | 77423.   |
| 35    | 883013.   | 804054.   | 78959.   |
| 40    | 1112321.  | 1014147.  | 98174.   |
| 45    | 1287570.  | 1175042.  | 112528.  |
| 50    | 1176201.  | 1083507.  | 92594.   |
| 55    | 1126891.  | 1043618.  | 83273.   |
| 60    | 775836.   | 715009.   | 60827.   |
| 65    | 786510.   | 720340.   | 66170.   |
| 70    | 783923.   | 724916.   | 59007.   |
| 75    | 864036.   | 806862.   | 57174.   |
| total | 14871911. | 13653113. | 1218793. |

percentage distribution

-----

| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 5.0300    | 5.0792    | 5.0894   |
| 5     | 5.1045    | 5.0930    | 5.2328   |
| 10    | 5.5463    | 5.5306    | 5.7223   |
| 15    | 6.2212    | 6.2096    | 6.3506   |
| 20    | 6.5522    | 6.5508    | 6.5682   |
| 25    | 6.4145    | 6.4037    | 6.5363   |
| 30    | 5.9342    | 5.8969    | 6.3524   |
| 35    | 5.9375    | 5.8892    | 6.4735   |
| 40    | 7.4793    | 7.4280    | 3.0550   |
| 45    | 8.6577    | 8.6064    | 9.2327   |
| 50    | 7.9089    | 7.9367    | 7.5972   |
| 55    | 7.5773    | 7.6438    | 6.8324   |
| 60    | 5.2168    | 5.2370    | 4.9908   |
| 65    | 5.2886    | 5.2760    | 5.4291   |
| 70    | 5.2712    | 5.3095    | 4.8414   |
| 75    | 5.8099    | 5.9097    | 4.6910   |
| total | 100.0000  | 100.0000  | 100.0000 |
| m.ag  | 40.6400   | 40.7175   | 39.7711  |
| sha   | 100.0000  | 91.8047   | 3.1953   |
| lam   | 0.979524  | 0.977678  | 1.000700 |
| r     | -0.004138 | -0.004515 | 0.000140 |

| year 2014  |           |           |          |
|------------|-----------|-----------|----------|
| -----      |           |           |          |
| population |           |           |          |
| -----      |           |           |          |
| age        | total     | frg       | w-berlin |
| 0          | 2308956.  | 2257052.  | 51904.   |
| 5          | 2354257.  | 2303229.  | 51028.   |
| 10         | 2502218.  | 2449278.  | 52940.   |
| 15         | 2797673.  | 2737360.  | 60313.   |
| 20         | 3129574.  | 3051894.  | 77679.   |
| 25         | 3253334.  | 3163298.  | 90037.   |
| 30         | 3143388.  | 3056476.  | 86913.   |
| 35         | 3011261.  | 2928526.  | 82735.   |
| 40         | 3318094.  | 3229839.  | 98205.   |
| 45         | 4659647.  | 4541705.  | 117942.  |
| 50         | 4643981.  | 4532020.  | 111961.  |
| 55         | 3936471.  | 3847151.  | 89320.   |
| 60         | 3547160.  | 3462309.  | 84852.   |
| 65         | 2931245.  | 2861128.  | 70117.   |
| 70         | 2889095.  | 2816871.  | 72223.   |
| 75         | 4918538.  | 4814776.  | 103762.  |
| total      | 53344892. | 52052960. | 1291931. |

| year 2015  |           |           |          |
|------------|-----------|-----------|----------|
| -----      |           |           |          |
| population |           |           |          |
| -----      |           |           |          |
| age        | total     | gdr       | e-berlin |
| 0          | 755244.   | 691689.   | 63555.   |
| 5          | 747902.   | 685320.   | 62582.   |
| 10         | 757689.   | 693936.   | 63754.   |
| 15         | 822513.   | 752080.   | 70433.   |
| 20         | 921015.   | 841087.   | 79928.   |
| 25         | 969746.   | 884991.   | 84756.   |
| 30         | 948762.   | 865172.   | 83589.   |
| 35         | 875993.   | 797876.   | 78117.   |
| 40         | 873181.   | 794806.   | 78375.   |
| 45         | 1093353.  | 996914.   | 96439.   |
| 50         | 1253687.  | 1144631.  | 109057.  |
| 55         | 1129511.  | 1041303.  | 88209.   |
| 60         | 1052540.  | 975524.   | 77016.   |
| 65         | 689622.   | 636392.   | 53230.   |
| 70         | 643352.   | 590347.   | 53005.   |
| 75         | 1063424.  | 989521.   | 73903.   |
| total      | 14597537. | 13381589. | 1215948. |

| percentage distribution |           |           |           |
|-------------------------|-----------|-----------|-----------|
| -----                   |           |           |           |
| age                     | total     | frg       | w-berlin  |
| 0                       | 4.3284    | 4.3361    | 4.0176    |
| 5                       | 4.4133    | 4.4248    | 3.9497    |
| 10                      | 4.6906    | 4.7054    | 4.0973    |
| 15                      | 5.2445    | 5.2588    | 4.6685    |
| 20                      | 5.8667    | 5.8631    | 6.0127    |
| 25                      | 6.0937    | 6.0771    | 6.9691    |
| 30                      | 5.8926    | 5.8719    | 6.7273    |
| 35                      | 5.6449    | 5.6261    | 6.4039    |
| 40                      | 6.2201    | 6.2050    | 6.8274    |
| 45                      | 8.7349    | 8.7252    | 9.1291    |
| 50                      | 8.7056    | 8.7066    | 8.6662    |
| 55                      | 7.3793    | 7.3908    | 6.9137    |
| 60                      | 6.6495    | 6.6515    | 6.5678    |
| 65                      | 5.4949    | 5.4966    | 5.4273    |
| 70                      | 5.4159    | 5.4115    | 5.5903    |
| 75                      | 9.2203    | 9.2493    | 8.0315    |
| total                   | 100.0000  | 100.0000  | 100.0000  |
| m.ag                    | 43.5157   | 43.5188   | 43.3919   |
| sha                     | 100.0000  | 97.5731   | 2.4218    |
| lam                     | 0.972361  | 0.972637  | 0.961366  |
| r                       | -0.005606 | -0.005549 | -0.007880 |

| percentage distribution |           |           |           |
|-------------------------|-----------|-----------|-----------|
| -----                   |           |           |           |
| age                     | total     | gdr       | e-berlin  |
| 0                       | 5.1738    | 5.1690    | 5.2268    |
| 5                       | 5.1235    | 5.1214    | 5.1468    |
| 10                      | 5.1905    | 5.1857    | 5.2431    |
| 15                      | 5.6346    | 5.6203    | 5.7925    |
| 20                      | 6.3094    | 6.2854    | 6.5733    |
| 25                      | 6.6432    | 6.6135    | 6.9703    |
| 30                      | 6.4995    | 6.4654    | 6.8744    |
| 35                      | 6.0010    | 5.9625    | 6.4244    |
| 40                      | 5.9317    | 5.9395    | 6.4456    |
| 45                      | 7.4900    | 7.4499    | 7.9311    |
| 50                      | 8.5883    | 8.5538    | 8.9639    |
| 55                      | 7.7377    | 7.7816    | 7.2543    |
| 60                      | 7.2104    | 7.2900    | 6.3333    |
| 65                      | 4.7242    | 4.7557    | 4.3777    |
| 70                      | 4.4073    | 4.4116    | 4.3592    |
| 75                      | 7.2850    | 7.3946    | 6.0778    |
| total                   | 100.0000  | 100.0000  | 100.0000  |
| m.ag                    | 41.3521   | 41.4390   | 40.3957   |
| sha                     | 100.0000  | 91.6702   | 8.3293    |
| lam                     | 0.931551  | 0.930113  | 0.997562  |
| r                       | -0.003724 | -0.004018 | -0.000463 |

| year 2019  |           |           |          |
|------------|-----------|-----------|----------|
| -----      |           |           |          |
| population |           |           |          |
| -----      |           |           |          |
| age        | total     | frg       | w-berlin |
| 0          | 2215371.  | 2165872.  | 49500.   |
| 5          | 2281002.  | 2232083.  | 48919.   |
| 10         | 2349997.  | 2300927.  | 49071.   |
| 15         | 2494629.  | 2441170.  | 53459.   |
| 20         | 2784124.  | 2714923.  | 69201.   |
| 25         | 3113935.  | 3028019.  | 85965.   |
| 30         | 3234804.  | 3146449.  | 88354.   |
| 35         | 3118871.  | 3035226.  | 83645.   |
| 40         | 2978037.  | 2893350.  | 79236.   |
| 45         | 3257724.  | 3174351.  | 83373.   |
| 50         | 4526823.  | 4416990.  | 109834.  |
| 55         | 4449043.  | 4346632.  | 102411.  |
| 60         | 3682317.  | 3602705.  | 79612.   |
| 65         | 3173908.  | 3101525.  | 72383.   |
| 70         | 2431911.  | 2375963.  | 55947.   |
| 75         | 4616235.  | 4509324.  | 106911.  |
| total      | 50708828. | 49491008. | 1217820. |

| percentage distribution |           |           |           |
|-------------------------|-----------|-----------|-----------|
| -----                   |           |           |           |
| age                     | total     | frg       | w-berlin  |
| 0                       | 4.3688    | 4.3763    | 4.0646    |
| 5                       | 4.4982    | 4.5101    | 4.0169    |
| 10                      | 4.6343    | 4.6492    | 4.0294    |
| 15                      | 4.9195    | 4.9326    | 4.3897    |
| 20                      | 5.4904    | 5.4857    | 5.6823    |
| 25                      | 6.1409    | 6.1183    | 7.0589    |
| 30                      | 6.3792    | 6.3576    | 7.2551    |
| 35                      | 6.1505    | 6.1329    | 6.8684    |
| 40                      | 5.8729    | 5.8573    | 6.5064    |
| 45                      | 6.4244    | 6.4140    | 6.8461    |
| 50                      | 8.9271    | 8.9248    | 9.0189    |
| 55                      | 8.7737    | 8.7827    | 8.4094    |
| 60                      | 7.2617    | 7.2795    | 6.5373    |
| 65                      | 6.2591    | 6.2668    | 5.9436    |
| 70                      | 4.7958    | 4.8008    | 4.5940    |
| 75                      | 9.1034    | 9.1114    | 8.7789    |
| total                   | 100.0000  | 100.0000  | 100.0000  |
| m.ag                    | 43.7653   | 43.7682   | 43.6475   |
| sha                     | 100.0000  | 97.5934   | 2.4016    |
| lam                     | 0.950585  | 0.950732  | 0.942636  |
| r                       | -0.010136 | -0.010094 | -0.011815 |

| year 2020  |           |           |          |
|------------|-----------|-----------|----------|
| -----      |           |           |          |
| population |           |           |          |
| -----      |           |           |          |
| age        | total     | gdr       | e-berlin |
| 0          | 733140.   | 668637.   | 64503.   |
| 5          | 747650.   | 683654.   | 63997.   |
| 10         | 746479.   | 683908.   | 62571.   |
| 15         | 755549.   | 691140.   | 64409.   |
| 20         | 818788.   | 746283.   | 72505.   |
| 25         | 916584.   | 832671.   | 83914.   |
| 30         | 964458.   | 876003.   | 88455.   |
| 35         | 941737.   | 857421.   | 84316.   |
| 40         | 865239.   | 788593.   | 77546.   |
| 45         | 858289.   | 781331.   | 76958.   |
| 50         | 1064579.  | 971130.   | 93448.   |
| 55         | 1203851.  | 1100101.  | 103749.  |
| 60         | 1054933.  | 973410.   | 81522.   |
| 65         | 935663.   | 868208.   | 67454.   |
| 70         | 564192.   | 521510.   | 42682.   |
| 75         | 872161.   | 805983.   | 66178.   |
| total      | 14044290. | 12850082. | 1194208. |

| percentage distribution |           |           |           |
|-------------------------|-----------|-----------|-----------|
| -----                   |           |           |           |
| age                     | total     | gdr       | e-berlin  |
| 0                       | 5.2202    | 5.2034    | 5.4013    |
| 5                       | 5.3235    | 5.3222    | 5.3589    |
| 10                      | 5.3152    | 5.3222    | 5.2395    |
| 15                      | 5.3798    | 5.3785    | 5.3935    |
| 20                      | 5.8300    | 5.8076    | 6.0714    |
| 25                      | 6.5264    | 6.4799    | 7.0267    |
| 30                      | 6.8673    | 6.8171    | 7.4070    |
| 35                      | 6.7055    | 6.6725    | 7.0604    |
| 40                      | 6.1679    | 6.1376    | 6.4935    |
| 45                      | 6.1113    | 6.0804    | 6.4443    |
| 50                      | 7.5802    | 7.5574    | 7.8251    |
| 55                      | 8.5718    | 8.5610    | 3.6877    |
| 60                      | 7.5115    | 7.5751    | 6.8265    |
| 65                      | 6.6622    | 6.7554    | 5.6485    |
| 70                      | 4.0172    | 4.0584    | 3.5741    |
| 75                      | 6.2101    | 6.2722    | 5.5416    |
| total                   | 100.0000  | 100.0000  | 100.0000  |
| m.ag                    | 41.3381   | 41.4273   | 40.3787   |
| sha                     | 100.0000  | 91.4969   | 3.5032    |
| lam                     | 0.962100  | 0.960281  | 0.992121  |
| r                       | -0.007727 | -0.008106 | -0.003608 |

year 2024

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population

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| age   | total     | frg       | w-berlin |
|-------|-----------|-----------|----------|
| 0     | 2068361.  | 2022332.  | 46029.   |
| 5     | 2188550.  | 2141873.  | 46677.   |
| 10    | 2276375.  | 2229306.  | 47069.   |
| 15    | 2342369.  | 2293253.  | 49616.   |
| 20    | 2482547.  | 2421104.  | 61443.   |
| 25    | 2770256.  | 2693709.  | 76547.   |
| 30    | 3096248.  | 3011845.  | 84403.   |
| 35    | 3209577.  | 3124414.  | 85162.   |
| 40    | 3084521.  | 3004253.  | 80269.   |
| 45    | 2923902.  | 2849010.  | 74892.   |
| 50    | 3164856.  | 3087252.  | 77604.   |
| 55    | 4336797.  | 4236358.  | 100439.  |
| 60    | 4161730.  | 4070551.  | 91229.   |
| 65    | 3294943.  | 3226754.  | 68189.   |
| 70    | 2633280.  | 2575413.  | 57866.   |
| 75    | 3886149.  | 3802710.  | 83439.   |
| total | 47921508. | 46790636. | 1130873. |

percentage distribution

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| age   | total     | frg       | w-berlin  |
|-------|-----------|-----------|-----------|
| 0     | 4.3161    | 4.3221    | 4.0702    |
| 5     | 4.5669    | 4.5776    | 4.1276    |
| 10    | 4.7513    | 4.7655    | 4.1622    |
| 15    | 4.8890    | 4.9011    | 4.3874    |
| 20    | 5.1804    | 5.1743    | 5.4332    |
| 25    | 5.7808    | 5.7569    | 6.7688    |
| 30    | 6.4611    | 6.4369    | 7.4635    |
| 35    | 6.6976    | 6.6774    | 7.5307    |
| 40    | 6.4366    | 6.4206    | 7.0930    |
| 45    | 6.1014    | 6.0888    | 6.6225    |
| 50    | 6.6042    | 6.5930    | 6.8623    |
| 55    | 9.0498    | 9.0539    | 8.3316    |
| 60    | 8.6846    | 8.6995    | 8.0671    |
| 65    | 6.8757    | 6.8962    | 6.0293    |
| 70    | 5.4950    | 5.5041    | 5.1170    |
| 75    | 8.1094    | 8.1271    | 7.3783    |
| total | 100.0000  | 100.0000  | 100.0000  |
| m.ag  | 43.9039   | 43.9201   | 43.4449   |
| sha   | 100.0000  | 97.6402   | 2.3598    |
| lam   | 0.945033  | 0.945437  | 0.928604  |
| r     | -0.011307 | -0.011222 | -0.014814 |

tolerance level for eigenvalue 0.1000e-05  
number of iterations to reach stability 59

year 2025

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population

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| age   | total     | gdr       | e-berlin |
|-------|-----------|-----------|----------|
| 0     | 687598.   | 624999.   | 62599.   |
| 5     | 725769.   | 661041.   | 64729.   |
| 10    | 746227.   | 682310.   | 63917.   |
| 15    | 744370.   | 681137.   | 63233.   |
| 20    | 752127.   | 685783.   | 66343.   |
| 25    | 814849.   | 738957.   | 75392.   |
| 30    | 911586.   | 824469.   | 87117.   |
| 35    | 957318.   | 863304.   | 89014.   |
| 40    | 931251.   | 847562.   | 83689.   |
| 45    | 851466.   | 775317.   | 76149.   |
| 50    | 835697.   | 761147.   | 74551.   |
| 55    | 1022253.  | 933364.   | 88890.   |
| 60    | 1124253.  | 1028481.  | 95773.   |
| 65    | 937723.   | 866370.   | 71353.   |
| 70    | 765574.   | 711441.   | 54133.   |
| 75    | 765324.   | 711876.   | 53447.   |
| total | 13573385. | 12402556. | 1170829. |

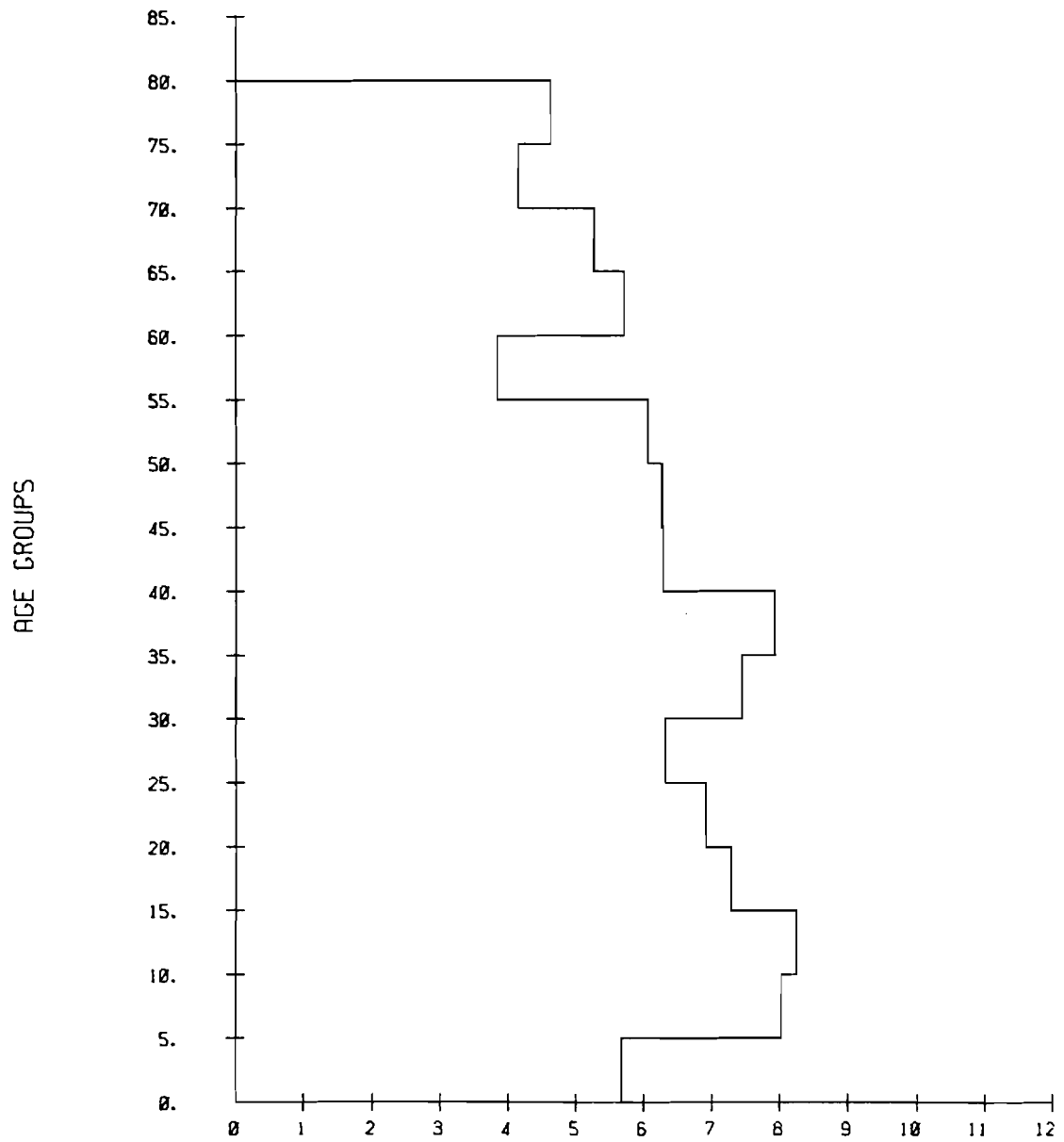
percentage distribution

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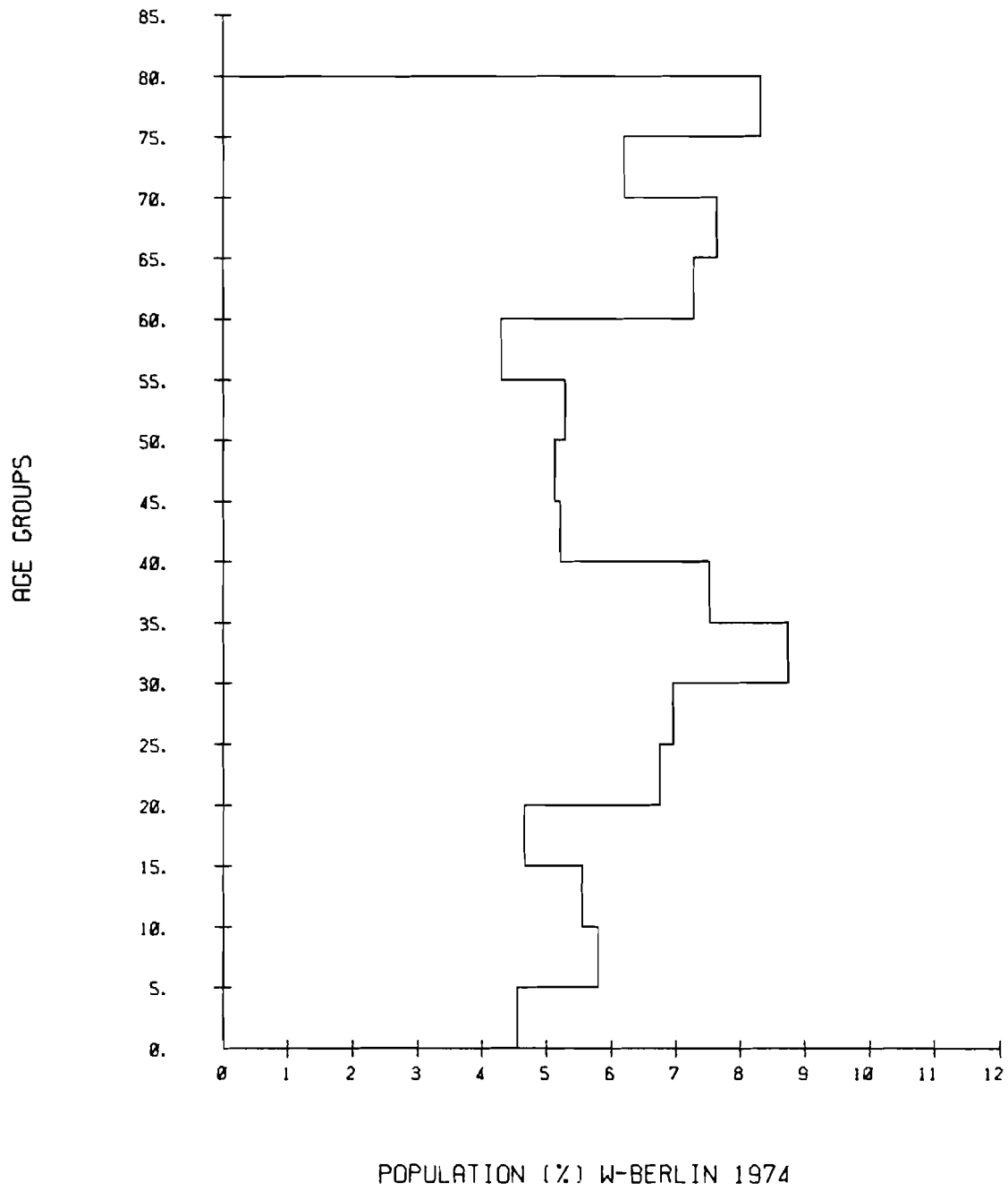
| age   | total     | gdr       | e-berlin  |
|-------|-----------|-----------|-----------|
| 0     | 5.0658    | 5.0393    | 5.3466    |
| 5     | 5.3470    | 5.3299    | 5.5284    |
| 10    | 5.4977    | 5.5014    | 5.4591    |
| 15    | 5.4840    | 5.4919    | 5.4007    |
| 20    | 5.5412    | 5.5294    | 5.6664    |
| 25    | 6.0033    | 5.9581    | 6.4819    |
| 30    | 6.7160    | 6.6476    | 7.4406    |
| 35    | 7.0529    | 7.0010    | 7.6026    |
| 40    | 6.8609    | 6.8338    | 7.1473    |
| 45    | 6.2731    | 6.2513    | 6.5039    |
| 50    | 6.1569    | 6.1370    | 6.3673    |
| 55    | 7.5313    | 7.5256    | 7.5920    |
| 60    | 8.2328    | 8.2925    | 8.1799    |
| 65    | 6.9085    | 6.9354    | 6.0942    |
| 70    | 5.6403    | 5.7362    | 4.6235    |
| 75    | 5.6384    | 5.7398    | 4.5649    |
| total | 100.0000  | 100.0000  | 100.0000  |
| m.ag  | 41.6572   | 41.7708   | 40.4538   |
| sha   | 100.0000  | 91.3741   | 8.6259    |
| lam   | 0.966470  | 0.965173  | 0.980423  |
| r     | -0.006821 | -0.007090 | -0.003954 |

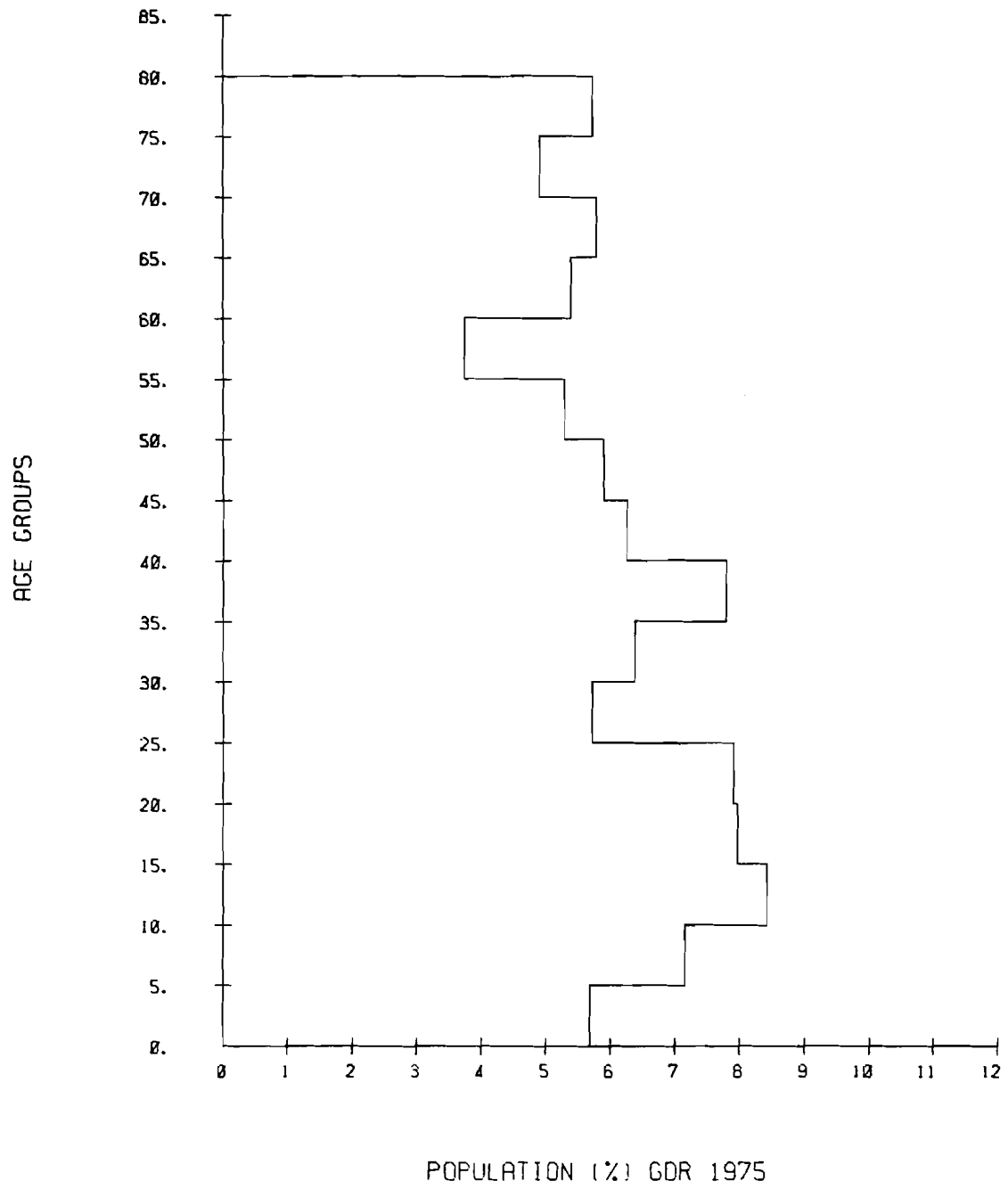
tolerance level for eigenvalue 0.1000e-06  
number of iterations to reach stability 153

APPENDIX F: AGE COMPOSITIONS: FRG AND WEST  
BERLIN, 1974; GDR AND EAST BERLIN, 1975

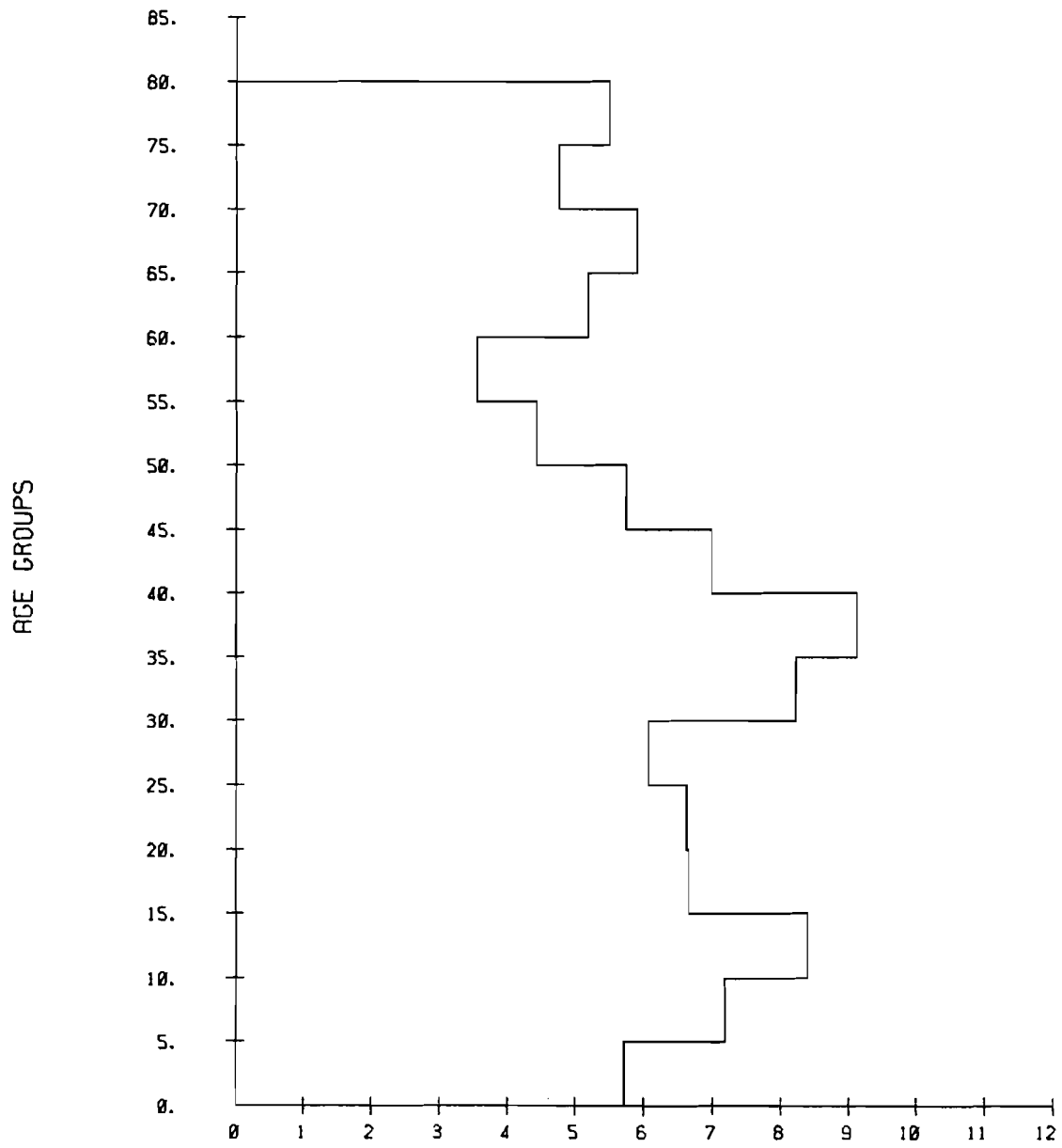


POPULATION (%) FRG 1974



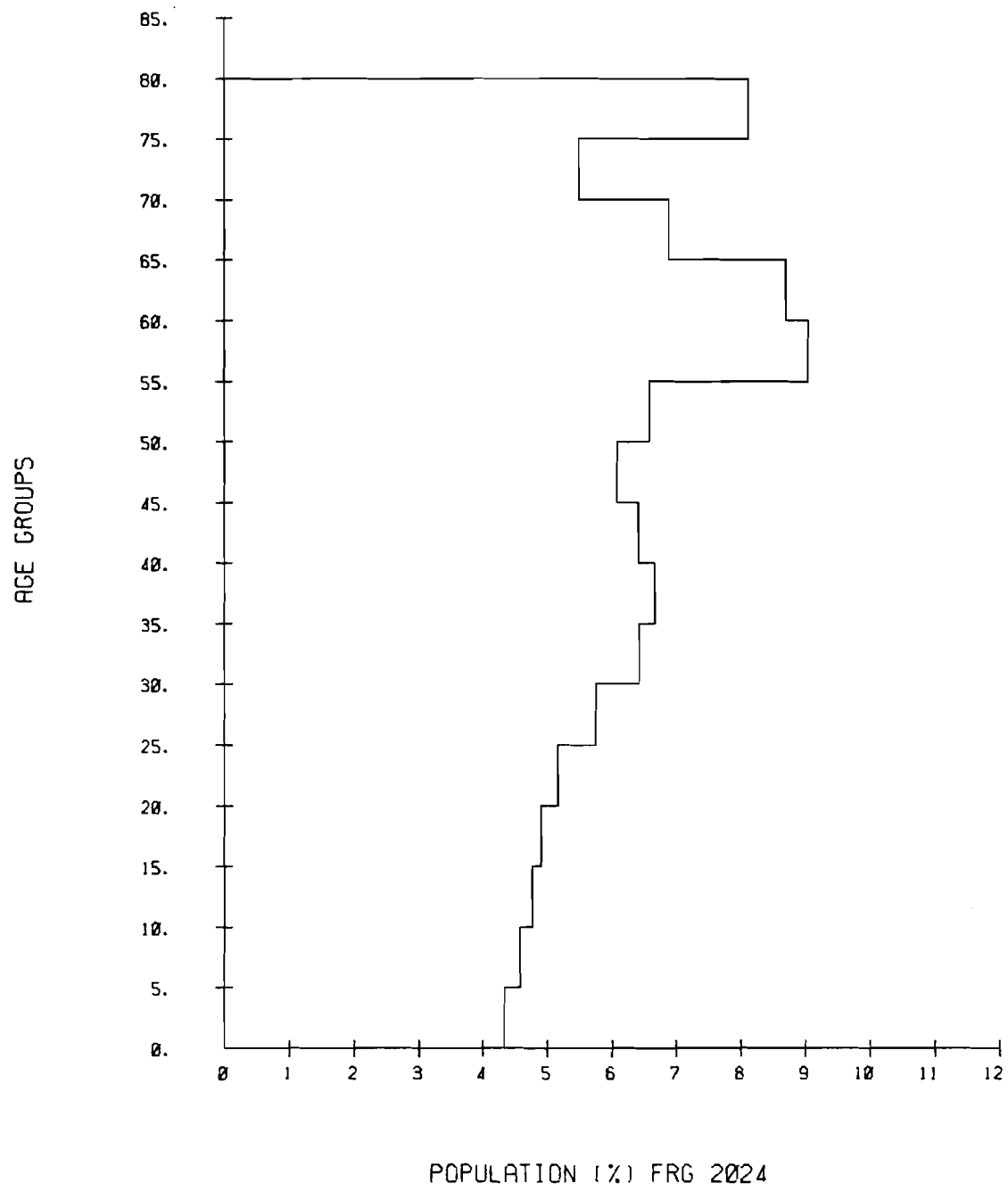


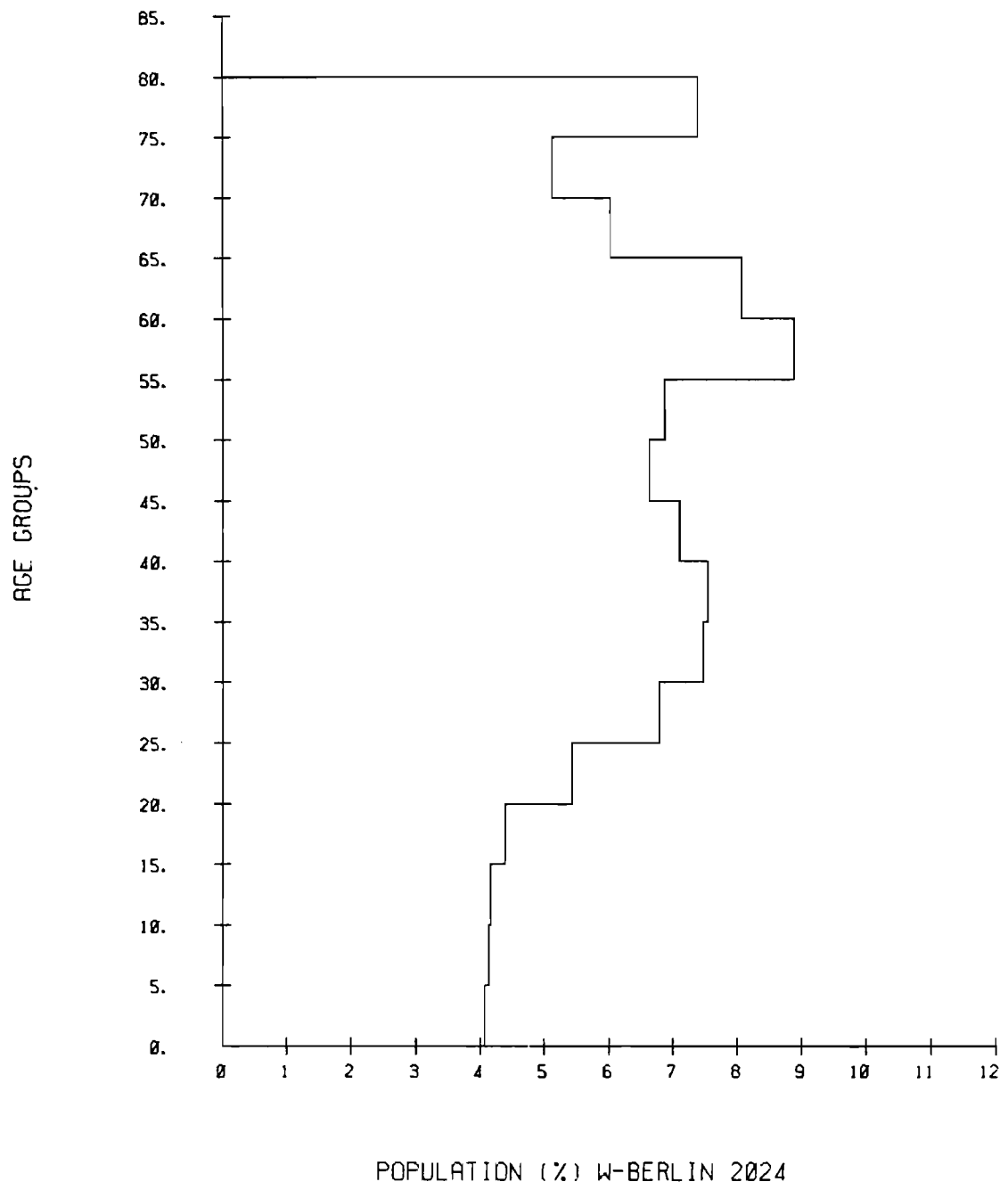


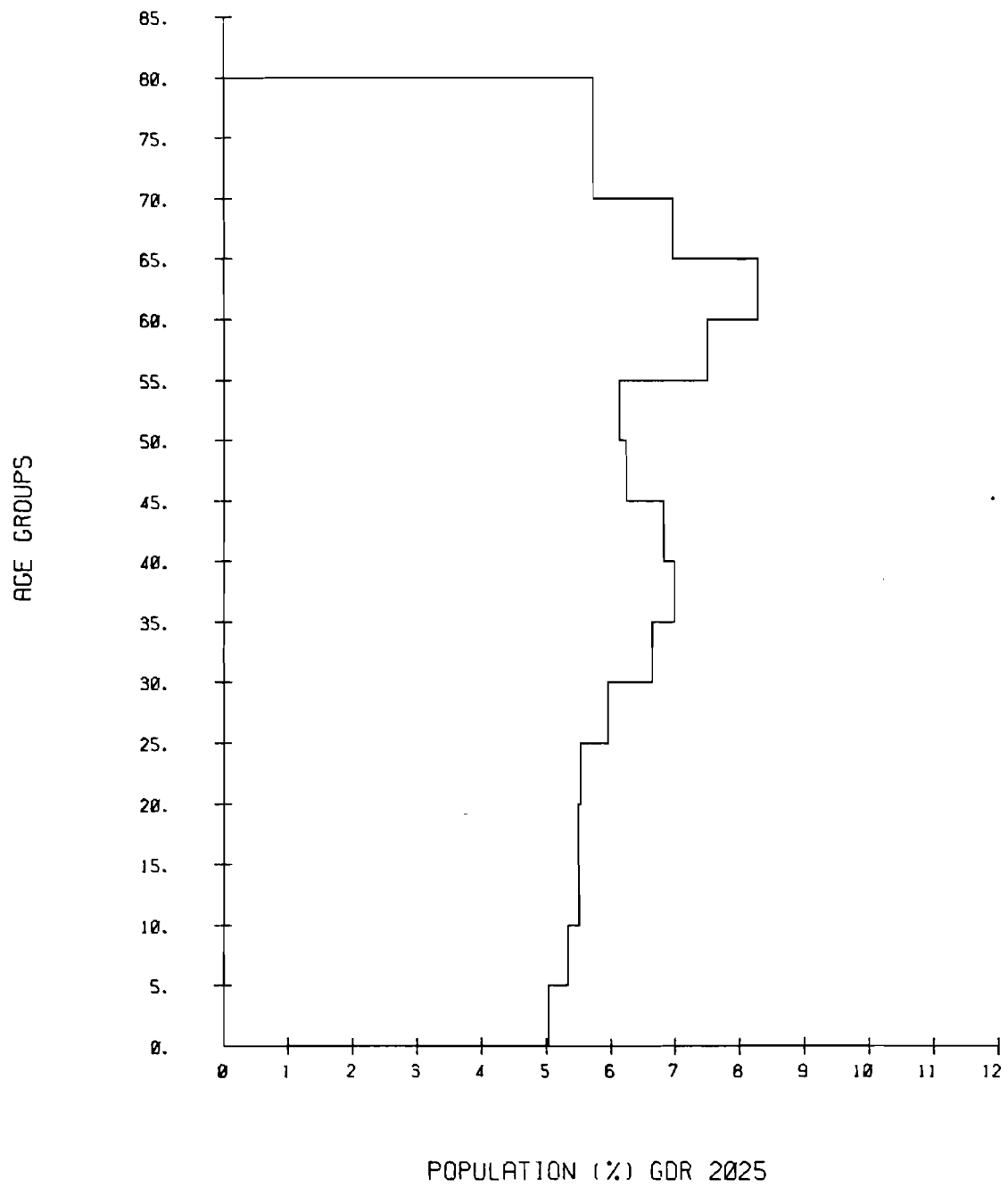


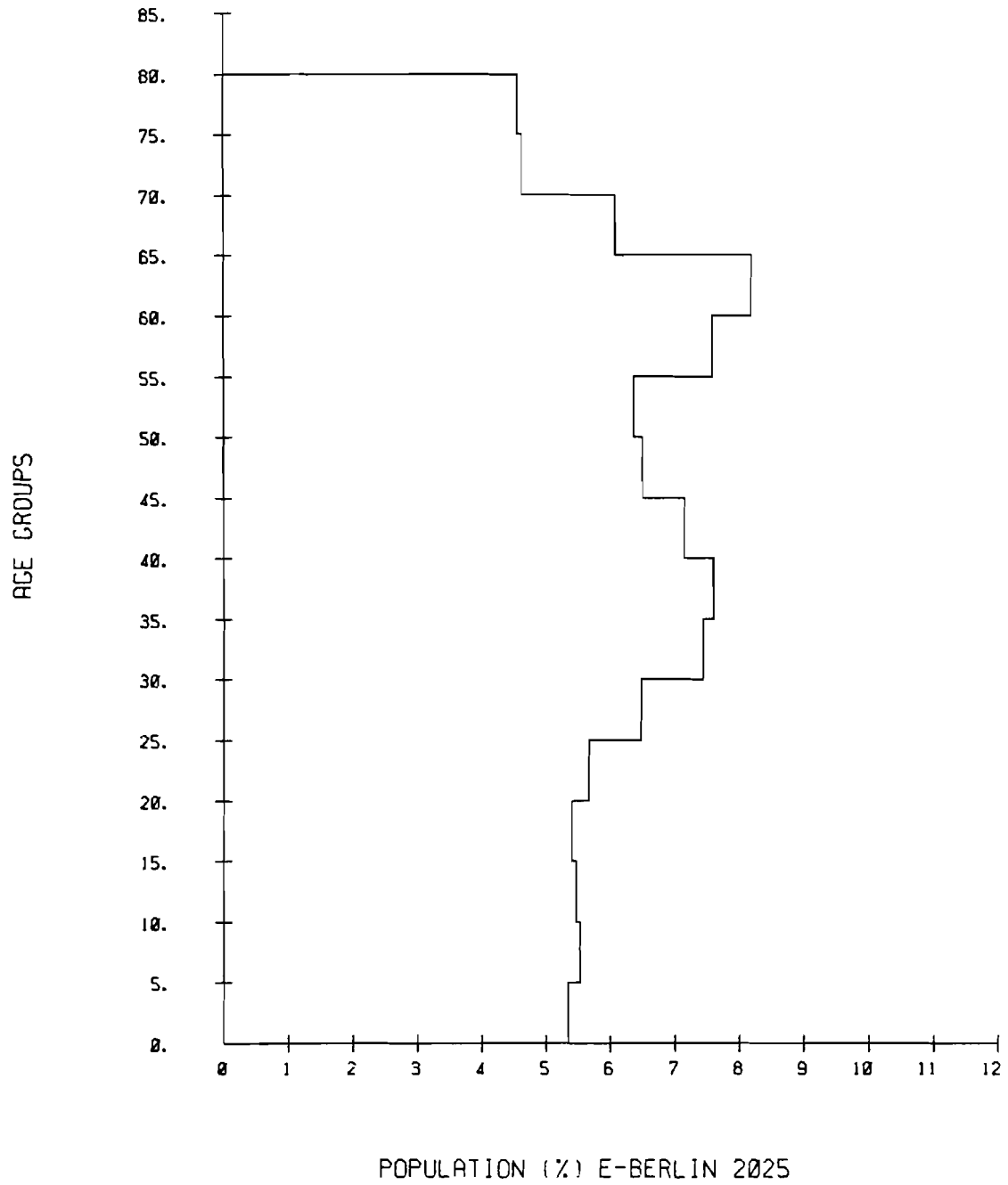
POPULATION (%) E-BERLIN 1975

APPENDIX G: AGE COMPOSITIONS: FRG AND WEST  
BERLIN - 2024; GDR AND EAST BERLIN - 2025









SELECTED PAPERS ON MIGRATION AND SETTLEMENT  
AT IIASA

- Andrei Rogers, editor, *Migration and Settlement: Selected Essays*. RR-78-6. Reprinted from a special issue of *Environment and Planning A* 10(5):469-617.
- Andrei Rogers and Frans Willekens, *Migration and Settlement: Measurement and Analysis*. RR-78-13.
- Frans Willekens and Andrei Rogers, *Spatial Population Analysis: Methods and Computer Programs*. RR-78-18.
- Andrei Rogers, *Migration Patterns and Population Redistribution*. RR-80-7. Reprinted from *Regional Science and Urban Economics* 9(1970):275-310.
- Andrei Rogers, editor, *Essays in Multistate Mathematical Demography*. RR-80-10. Reprinted from a special issue of *Environment and Planning A* 12(5):485-622.
- Nathan Keyfitz, *Multidimensionality in Population Analysis*. RR-80-33. Reprinted from *Sociological Methodology* 1980, K. Schuessler, ed., pp. 191-218.